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LIEUT.-COLONEL G. F. R. HENDERSON, C.B.

IN MEMORIAM.

*By Lieut.-Colonel R. M. HOLDEN,
Secretary, Royal United Service Institution.*

GEORGE FRANCIS ROBERT HENDERSON, the eldest son of the Very Reverend William George Henderson, D.D., D.C.L., Dean of Carlisle, was born at St. Heliers, in Jersey, on the 2nd June, 1854. He was educated at Leeds Grammar School, of which his father was then Head Master, and where he early acquired a knowledge of history to such purpose as to secure him an historical exhibition at St. John's College, Oxford. But he soon deserted the University for Sandhurst, obtaining his commission in the 65th, now the 1st Battalion York and Lancaster Regiment, on the 1st May, 1878. So he joined the Army with the advantage of a combined university and technical training, a system which finds considerable favour with our present military advisers. He was promoted to the rank of lieutenant in his regiment on the 24th June, 1879.

The Egyptian War of 1882 brought him his first experience of the practical side of war. With the 2nd Battalion of the York and Lancaster Regiment he embarked at Dublin on the 5th August in the "Nevada," and arrived at Alexandria on the 17th of the month. His battalion, with the 2nd Battalion Royal Irish, 1st Battalion Royal Irish Fusiliers, and a battalion of Royal Marines, formed Major-General Sir Gerald Graham's brigade of the 1st Division. Henderson was present, in command of his half company, in the engagements at Magfar and Tel-el-Mahuta, in the two actions of Kassassin, and in the battle of Tel-el-Kebir, where

he led his battalion into the enemy's works. He attracted the notice of Lord Wolseley, and, in a regiment which invariably did well, he was selected from among the junior officers for the Order of the Medjidieh, and the promise of a brevet majority as soon as he should obtain his company, for which he had to wait until the 2nd June, 1886.¹

Up to this time he had apparently lived the usual life of the subaltern of that day—he did his duty, played cricket, fished, and was ready for any harmless amusement at any time. Yet even in these early days he always read, in spite of the difficulty of obtaining books. At that time there were few military libraries abroad. At Gibraltar, Bermuda, and Nova Scotia were the relics of Government libraries, but the books were of ancient date. In Henderson's quarters, however, were to be found well-thumbed volumes of standard military works, which he had ordered from England at his own expense. He was popular with his comrades, and, though a strict disciplinarian, was beloved by his men, whom he held in the hollow of his hand.²

After a tour of duty with his battalion in Nova Scotia and the Bermudas, Henderson, on the 1st January, 1885, still a lieutenant, was appointed to do duty with the Commissariat and Transport Staff, with which he served until the 31st August, 1889. This occupation was not altogether congenial to his tastes, but the years thus spent in Scotland and at Gibraltar were employed, not only in the careful discharge of his duty, but in almost unceasing study. He daily added to his stock of learning, and, unknown to his comrades, he was incessantly engaged in thinking out the problems of the art of war. One result of this was the publication of his first book, "The Campaign of Fredericksburg," one of the most interesting episodes in the War of Secession in America. So remarkable was this little work that it attracted the attention of Lord Wolseley, then Commander-in-Chief, who, considering that its author was a man likely to prove a good trainer of young officers, appointed him to be instructor at Sandhurst. The appointment was a happy one in more senses than one, for Henderson had been for some time disappointed with his professional prospects, and had seriously contemplated severing his connection with the Service.

His appointment was dated the 1st January, 1890, and in the spring term of that year he entered upon his duties as Instructor in Tactics, Military Administration, and Law. Sandhurst is a typical place for the instruction of the young officer, and one peculiarly adapted for training purposes, the diversity of ground offering great opportunities for learning scouting, reconnoitring, skirmishing, and

¹ Major-General F. E. E. Wilson, C.B., who commanded his battalion, speaks of his talents as far above the average, and bears testimony to his good service in Egypt.

² One of his life-long friends tells me that Henderson's non-commissioned officers, knowing the interest he took in their welfare, kept up a regular correspondence with him, informing him from time to time of their progress in life long after he left the regiment.

wood fighting. With the general training of the cadets, Henderson, however, had nothing to do. Though he would have liked to have coupled with it their practical training—for he was a thoroughly practical soldier—his duty consisted in theoretical instruction alone; and had he not begged the Professor to occasionally permit him to take the cadets out skirmishing and patrolling, his work would have been confined to the lecture-room. The instructional staff, or “ushers” as they were called, never went on parade, and had nothing to say to the field-work of the cadets. The officers at Sandhurst were those who conducted the barrack-square parades, and only those who went on parade were thought anything of by the cadets: the “ushers,” who were concerned only with theoretical instruction, were correspondingly looked down upon.¹ It speaks a great deal for Henderson’s personality that, in spite of this feeling, he was one of the most popular men at the College. His tact, his cordial bearing, and his love of sport endeared him to the cadets, upon whom his influence for good was conspicuous.² He interested himself in them in and out of study, and they were frequent guests at his house. He played cricket with them, and was generally requisitioned as umpire or referee in any sport or game requiring accuracy of observation, quick decision, and persistence of opinion. He was a firm believer in reasonable recreation and in physical education, and was alive to the importance in war of nerve, health, and physique.

In 1891, with the willing sanction of General Clive, Henderson originated, edited, and was a constant contributor to the *R.M.C. Magazine*. It was started with a view of fostering *esprit de corps* among the cadets, but after a few months’ existence was ordered to be discontinued by the War Office, presumably as too progressive.

Henderson’s sphere of action was greatly enlarged when he was appointed, on the 17th December, 1892, Professor of Military Art and History at the Staff College. During the next seven years he exercised, by his lectures and his personality, an influence upon the younger generation of officers of the British Army for which, it has been said, it would be difficult to find a parallel nearer home than that of Moltke in Prussia. At Sandhurst he had to teach lads, fresh from the public schools, the rudiments of their profession. At the Staff College, on the other hand, his pupils were picked officers, whom he had to train in their duties, not only as future Staff officers, but as potential generals in the field. There he was as popular as in his regiment, or at the Military College. The students respected his great brain power, and his extraordinary capacity for work, his strong views on discipline and the absolute fairness of his methods. His personality fascinated them, as, indeed, it fascinated all who came within its spell. A strong believer in the maxim *mens sana in corpore sano*, he never ceased to

¹ In his evidence before the Education Committee last year, Colonel Henderson strongly urged the abolition of the titles “Professor” and “Instructor” as savouring too much of theory apart from practical training. His recommendations have been almost entirely carried out.

² Both General E. H. Clive, the then Governor and Commandant, and Lieut.-Colonel M. Wynyard, the Assistant Commandant and Secretary, bear testimony to Henderson’s high personal character, to the value placed upon his lectures, and the affection in which he was held by the cadets.

advocate the duty of officers to go in for cricket, athletics, and hunting to keep their bodies fit to resist the strain of war; but he was equally insistent on the necessity for their training their minds, so that intellectually they should be ready to cope with the sudden responsibilities which in the course of a campaign would inevitably confront them. I cannot do better than quote here the opinion formed of Henderson by the chief¹ under whom he served for nearly the whole of that seven years:—"In estimating the life-work of Colonel Henderson, and his influence on the military study and knowledge of British officers, it is scarcely possible to particularise any period in his career as pre-eminent. By his teaching, his publications, his lectures, and his everyday contact with officers of every branch of the Service, he has for some time past been the means of disseminating year by year throughout the Army the great value of the thoughtful study of past wars, and of the practical application to the problems of the future of the lessons to be drawn therefrom. Still, it may be safely said that no period of his career was fraught with greater advantages than the seven years between December, 1892, and December, 1899, during which he occupied the post of Professor of Military Art and History at the Staff College. The importance of this position, as affording unparalleled opportunities for influencing the officers placed in his charge for instruction in military art, was fully recognised by Colonel Henderson. From the moment of his taking over the duties till the day he left the College, he devoted himself to them with the closest application and most complete simple-mindedness. The spirit in which he conceived those duties was one that may well serve as an example to those who follow him. He considered that his mission was not restricted to the mere teaching of the subjects that entered into his curriculum, but extended to the extraction from those subjects of every lesson that should go to the making of an efficient commander in the field, and to its complete assimilation by the officers under his instruction. If any testimonial were necessary to the success of the system adopted by him, it is to be found strikingly recorded in the exploits of many of the column commanders in the late war who graduated under Colonel Henderson at the Staff College. The amount of work he got through was enormous; the preparation and delivery of most carefully thought-out lectures on military history, from which were drawn valuable lessons on every aspect of strategy and tactics; whole days spent on the ground in working out and criticising tactical schemes; no practical point, whether in connection with the tactical use of ground, the effect of fire, or the framing and conveyance of orders, being ignored. In all these exercises, whether in the lecture-hall or in the field, the extra-

¹ Major-General Sir H. J. T. Hildyard, K.C.B., *p.s.c.*, Director of Military Intelligence and Training; Commandant of the Staff College, 1892-98.

Colonel H. S. G. Miles, C.B., *M.V.O.*, *p.s.c.*, the present Commandant, under whom Henderson's last year at the College was spent, writes:—"I feel that the death of Colonel Henderson is a great loss to the Army and to the Staff College. His kindly nature and broad sympathies won for him the sincere affection of those who had the privilege of working with him, or under him. He exercised a deep influence over those with whom he was brought into contact, and the trace of his work at this College, to which he devoted the best years of his life, can never be effaced."

ordinary qualifications of Colonel Henderson as an instructor were equally conspicuous; he showed great clearness of thought and perception, simplicity and correctness of demonstration, a practical mind that discarded at once methods impracticable in war, and untiring industry and patience. There was yet another way in which he made the influence of his sound views and profound knowledge of military operations felt, and this was in the observations made by him on the military memoirs written by officers on past campaigns, and on subjects of Imperial military interest. There was no paper, however crude, that he did not notice points for encouragement towards renewed effort; so there was no paper, however complete, to which his practical and well thought-out remarks did not add value. To him it was a labour of love, and each memoir, good or indifferent, received the same measure of attention from him; it was nevertheless a very severe labour, gone through with the indomitable perseverance and pluck which always characterised him. There is one more aspect of Colonel Henderson's influence while at the Staff College which must not be left without mention, for it was a most important one—his hours of recreation, rare and curtailed as they were, he loved best to spend at the College, talking over, with the many who were anxious to discuss them, disputed points raised by the latest lecture, or the most recent work on military literature. And it would be difficult now to say where most was really learned by the officers anxious to acquire knowledge in military art—in the lecture-hall or in the ante-room of the Staff College Mess."

During his seven years' professorship at the Staff College Henderson was employed for six or seven hours a day at his official duties, either at the desk, in the lecture-room, or in the admirable out-door exercises, the scope of which he did so much to increase. One of the most agreeable of his duties was the personally conducted tours over European battle-fields, which will be long remembered by those who had the good fortune to take part in them. His cheery method of conveying his wonderful and intimate knowledge of the details of the battles fought on the ground visited, more particularly the great battle-fields of the Franco-German War, made a deep impression. Every incident appeared to be recorded in his retentive memory; he described the actions in a happy conversational manner that compelled the interest of his hearers, and rendered the tour round the battle-fields one of the most enjoyable features of the Staff College course.

In addition to all this work Henderson, by incessant application, made time while at the Staff College to enrich the field of military literature with many noteworthy publications. Amongst these may be mentioned "The Battle of Wörth," a study of the fight on the 6th August, 1870, during the Franco-German War, that campaign in which, by both forces having been armed with weapons of modern type, was brought into prominence the characteristic which makes all fighting from 1870 onward so different from the fighting of any previous war. The attainment of superiority of fire became the decisive factor, and the assault with the bayonet lost the importance which had hitherto belonged to it. Another of his essays in practical tactics and war training was "The Battle of Spicheren," a study especially valuable to those interested in the land defence of England, for the ground over which it was fought is in many respects similar to the range of heights which intervene between London and the Channel. A very valuable

feature in the book to young officers is that the student has presented to him numerous situations, with the surrounding circumstances in such detail that, even if he aspires to no more than the leading of a single company, he is in possession of the knowledge requisite not only for the conception of a definite plan of action, but also for testing the wisdom of his resolution.

Henderson had also contributed papers to the Aldershot Military Society, the Dublin Military Society, and the Royal United Service Institution. In the latter Institution—the *raison d'être* of which is the furtherance of naval and military art, science, and literature—he was deeply interested. He was at one time a member of the Council, had served on the Journal and Library Committee, and was a frequent lecturer there, as well as a constant contributor to its JOURNAL.¹ He was the regular military correspondent of the *Times* for foreign military manœuvres, and was the author of several other suggestive and thoughtful articles in that paper, as well as in the *Edinburgh Review*, and other magazines and quarterlies.

In 1898 appeared his "Stonewall Jackson and the American Civil War"—a book which is destined to exercise a great influence on the future of the Army; a book which will live in literature, and has already been invaluable in rousing in young officers a desire to study strategy, and appreciate the teachings of military history at its true value. It has been well described as three books in one—a biography, a history of a military campaign, and a treatise on the art of war. It is the biography of a man of noble character, a brilliant soldier, and a military genius of the highest order; a stirring description from the pen of an English master of military literature of the campaigns and battles fought in Virginia, relieved by graphic touches which give an insight into the character of one of the chief actors in the war; and it is a series of reflections, pregnant with thought, upon the undying principles of strategy and tactics, and the causes of victory and defeat. If one may venture to criticise such a work, one would say that its weak point lay in Henderson's extraordinary admiration for Jackson, and his tendency to over-estimate his qualities as a general and a leader. General Sir Henry Brackenbury contributed an able review of the book in *Blackwood's Magazine* for December, 1898. He sums up in the following words: "I rise from a close study of it profoundly impressed. As a soldier, the story of these campaigns, of that great warrior, has stirred my blood. As an old Professor of Military History, I uncover my head to the author, and tender him my grateful thanks."

Student and literary man as he was, Henderson was ever anxious to serve in the field. The "black week" in December, 1899, brought him his chance, for when Lord Roberts was ordered to South Africa to

¹ He read or contributed the following amongst other papers to the R.U.S.I. JOURNAL:—"Lessons from the Past for the Present," "The Framing of Orders in the Field," "Conversation on Cavalry," "Strategy and its Teaching," "The Manœuvres round Metz, 1890," "The French Manœuvres, 1891," "The Austro-Hungarian Manœuvres, 1894," and "The Army and Navy of Japan."

retrieve the fortunes of his country, he selected Henderson to accompany him. He was promoted to a half-pay lieutenant-colonelcy, from the York and Lancaster Regiment, on the 23rd December, and the same day was brought in on full pay as a special service officer. On the 10th January, 1900, he was appointed Director of Intelligence in South Africa, in which capacity, during the four weeks spent at the base of operations in Cape Town, he assisted his Chief by re-organising and enlarging the Intelligence Department, that important but little appreciated branch of the Service which afterwards contributed so materially to the relief of Kimberley, and the surrender of Cronje at Paardeberg: throughout the preparations for the great advance Henderson was in Lord Roberts's closest confidence. But at the moment of victory fortune failed him; he broke down at Paardeberg from malaria and fatigue, and in a few weeks was sent home shattered in health. For his distinguished services during the few weeks that he was able to take part in the campaign he was mentioned in despatches, and was created a C.B. A few months later, when he became fit for brain work, though not for duty in the field, he was employed in the revision of the Drill-book, the tactical portion of the last edition being almost entirely by his hand; and at the end of 1900 he was selected by Lord Roberts to write the official account of the South African War. To enable him to do this, it was necessary he should study the battle-fields of South Africa. He accordingly returned to that country, where he spent many months travelling hard, working incessantly, but tortured by malaria, which again seized upon him. The voyage, apparently, cured him; but soon the malady reasserted itself. He made a gallant fight against it; his spirit was so high that he would not own himself beaten; he went on working at the History of the War to the end of 1902, when he was ordered to Assouan, in Egypt, for change of air. Even there he continued to write and to correct the proofs of the first volume of the History, almost to the day of his death.

He contemplated writing a life of Robert Lee. This work, for which the family of the great Confederate leader have for some time past been collecting materials, was to have been a companion and sequel to the "Life of Stonewall Jackson." That Colonel Henderson has not lived to accomplish it must be reckoned a great loss, alike to America and to England. A life of Wellington was another which he had projected, and for which he had amassed a considerable quantity of material.

Towards the end of February his condition suddenly became more serious, and he passed away quietly at Assouan, on the Nile, on Thursday, the 5th March, in the forty-ninth year of his age. His body was embalmed, and buried with military honours in the Roman Catholic cemetery in Cairo. In him the King has lost a faithful soldier, the country a loyal servant, and the Army a writer and historian of great ability, a strategist whose reputation was not confined to England, and a man whose intellectual influence was enormous. The knowledge that he possessed it was his great object to apply to the advantage of his country and the Army. There is no more personal merit in the possession of naturally superior intellectual powers than in the succession to a large estate. It is the use which is made of the one as of the other which constitutes the only claim to respect. His was allied to goodness, and wisdom, and

embodied in upright character. An admirable trait in his character was his absolute freedom from professional prejudice. It was nothing to him whether an officer belonged to the Regular or Auxiliary forces: he would regard with equal deference the opinion of a Militia officer, a Volunteer officer, or a professional soldier, if he had reason to believe that the one as well as the other had brought a clear and candid mind to bear on any question. His book on Fredericksburg was actually addressed to the Volunteer force, and that branch of the Service has lost in him one of the most kindly and sympathetic of critics and instructors.

Colonel Henderson was particularly happy in his marriage. He was a man of a fascinating and modest nature, and a firm friend; without an enemy himself, he spoke ill of no man. Of a truly noble and manly character, he reminds one of Wordsworth's "Happy Warrior"—

"Who comprehends his trust, and to the same
Keeps faithful with a singleness of aim."

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VOL.

GOLD MEDAL PRIZE ESSAY.

Subject:—

“THE BEST ORGANISATION FOR THE LAND TRANSPORT
OF THE BRITISH ARMY, HAVING REGARD BOTH TO
HOME DEFENCE AND OVER-SEA EXPEDITIONS.”

By Major ASTLEY H. TERRY, Army Service Corps.

“Quot homines tot sententiæ.”

I.—INTRODUCTION.

LAND transport is necessarily as old as armies themselves; and from the difficulties of its organisation, the slowness of its movements, and its vulnerability to attack, has ever been a continual source of anxiety to generals in the field.

The Romans called things by their right names: they called the baggage, that is practically the train, of their armies, *impedimenta*—something that impedes or hinders. And if the Roman armies found their transport an embarrassment, how much more must we! The requirements of modern armies are far greater than those of their ancient predecessors; partly owing to increased civilisation, which demands greater luxury, but chiefly on account of modern methods, arms, and equipment. I do not suppose that as regards quantity the daily ration of the present-day soldier differs materially from his by-gone prototype: we can bear as much fatigue as could the ancients, and our food *necessities* are much the same as theirs. But in other directions:—in the care of sick, wounded, and prisoners; in regard to the supply of ammunition and warlike stores; in the hundred and one things essential to the efficiency of a modern army;—our requirements are infinitely greater than they were even a couple of centuries ago. Hence land transport has increased enormously in importance, and, as a necessary corollary, in size. It can no longer be improvised on the spur of the moment, but needs (perhaps as much as any branch of an army) careful preparation in peace to enable it to bear the strain of war.

Let us briefly consider to what end this preparation should be directed. Clearly the Army must be supplied with everything needful; while on the other hand the smaller we can make our transport the easier will be its organisation and the swifter its movements, and consequently the less the anxiety of the general concerning its safety.

What we have to aim at then is:—

- a. To reduce the wants of our armies in the field to a minimum compatible with efficiency.
- b. To ensure that everything necessary is at hand when wanted.

With the first point we have here nothing to do, the second depends on the efficacy of our peace organisation; and it is this organisation that we are now about to consider.

II.—RETROSPECTIVE.

Before proceeding farther it will be well to glance at the gradual development of our present system of land transport.

The first regular transport in the British Army appears to have been a "Corps of Royal Waggoners," which was raised as a combatant body in 1794, and disbanded at the end of the war.¹ I cannot, however, trace this corps in the Army Lists of the period (1794-99). In 1799 the Royal Waggon Train—also a combatant corps—was raised. This corps does not appear to have had much, if anything, to do with the carriage of supplies, but (according to Sir John Burgoyne) to have been mainly employed in "the conveyance of sick and wounded, ammunition, regimental baggage, and everything brought within range of the enemies' fire." It has been alleged that at the time of its being disbanded in 1833 the Royal Waggon Train was incapable of carrying even its own baggage without assistance, in which case its disappearance from the Army cannot have been a matter for regret, though it had previously performed excellent service in the Peninsula and Waterloo campaigns. Then came a long period, during which we had no regular transport at all; and in this state of absolute unreadiness we lightly embarked on the Crimean War. A rough awakening followed as a matter of course, and the Land Transport Corps was hastily raised under the guns of Sebastopol towards the end of 1854. At the conclusion of peace the Land Transport Corps was broken up, and replaced in 1857 by the Military Train. The mistake was made of placing this, a combatant corps, under the orders of non-combatant commissariat officers, with the natural result of causing a great amount of friction; so that when the Control Department was formed in 1870, the Military Train was replaced by the Supply and Transport Sub-Department, which arrangement lasted till 1875. Then came successively the Commissariat and Transport Department (till 1880), and the Commissariat and Transport Staff (till 1888), both non-combatant. December, 1888, witnessed the formation of the present (combatant) Army Service Corps.

Thus it is apparent that our "system" has been one of almost continual change; and that we have not yet arrived at a final solution of the problem may be inferred from the title of the present Essay.

I am unwilling to discuss, though I fear I cannot wholly avoid, the vexed question as to whether or not transport and supply should be one. Sometimes military opinion has answered this question in the affirmative, sometimes in the negative. Until quite lately, certainly, the two services were held to be inseparable; but if South Africa may

¹ "Records and Badges of the British Army," Chichester and Burgess-Short, London, 1895.

be taken as a guide, the swing of the pendulum appears now to be committing us to the exact opposite. It is not strictly speaking a matter for discussion here: nevertheless it is necessary that (omitting the well-worn arguments for and against) I should state the conclusion arrived at before proceeding farther. The South African war has been in some respects abnormal, and the conditions under which the transport service has been administered do not of themselves appear to warrant so radical a change as the separation of transport and supply, although their disunion during the campaign may have been attended with beneficial results. Mr. Brodrick, quoting Lord Roberts in the House of Commons, said:—"My wishes were always forestalled with regard to supplies. It is true that the men did not always receive full rations; but that was caused by the length of the lines of communications and by the difficulties of distribution."¹ A system which was sufficiently elastic to produce such a result, in spite of so fundamental a change as the separation of its two component parts on active service must certainly contain much that is good. Adaptability is the essence of efficiency: and to recommend a change of such magnitude permanently, because under certain special conditions it proved a success temporarily, does not seem to be warranted by the facts of the case. Therefore in endeavouring to fix on the best organisation for our land transport, I shall take it as an axiom that in the future transport and supply are as now to be close allies.

What in fact is wanted is not a new system, but rather the strengthening and expanding of the one we have got. The importance of the train to the Army is vastly greater than formerly; the question of supply—and that is after all what transport amounts to—like everything else, is gradually, one may say, being reduced to an exact science.

It would no doubt be highly interesting, if not particularly instructive, if we could go back a few hundred years and meet a mediæval army on the march. We should probably see very little "transport" in the modern sense—a motley collection of heavy country carts following higgledy-piggledy in rear would probably represent the "Train"; for the armies of the middle ages followed the system which Napoleon afterwards perfected, that of making war support war, and of living on the country occupied. This system had its advantages; it gave to the individual soldier great freedom and range of action, and largely reduced the amount of transport necessary. It must be remembered, however, that the armies of the middle ages possessed no mobility at all in the modern acceptance of the term. Until quite recently, indeed, opposing armies always went into winter quarters; they manœuvred and fought only during the warm weather. Think of the difference that must have made in the duties of the train compared with its responsibilities in a modern campaign! All that has been changed; and now a growing humanisation, and the imperative demands of an increased and increasing mobility forbid the adoption of Napoleon's system in its entirety, and leave us face to face with the absolute necessity of providing a well-organised and ample train.

On the other hand modern science is on our side, railways very largely assist road transport; but when we come to the distribution of supplies to the troops in the field, we find we must still rely mainly

¹ The Times, 18th March, 1902.

on animal transport. The matter of supply on a big scale is, as regards transport, not a very difficult undertaking in these days of fast steamships and railways; it is comparatively easy to pour material into the base. But the after distribution presents far greater difficulties, and that is when we want "transport" in the ordinarily accepted sense of the word.

III.—WHAT IS REQUIRED.

The Army Service Corps company is the unit of our land transport, which at present (October, 1902) consists of 62 service (horsed) companies, the establishment having been largely augmented since the commencement of the South African war. Abroad (with the exception of South Africa), and at several home stations, where there are no transport companies, the transport work is carried out entirely by contract or by local establishments of a semi-military character. The railway companies necessarily play an important part in our transport arrangements, even at stations where Army Service Corps companies are quartered. India has its own Supply and Transport Corps, which has nothing to do with the Army Service Corps, and which is constituted on a somewhat different basis.¹ Our home system on the whole works economically and well, and therefore I am opposed to any fundamental changes in its present organisation.

The title of this Essay would suggest perhaps that we require two separate, or at least distinct systems of land transport, one for home defence, and the other for active service abroad. This is so, I think, only in matters of detail; with regard to broad principles of organisation we want one system (exclusive of India) which shall be suitable both for home defence and for over-sea expeditions; that is to say one which shall be sufficiently elastic to fulfil all possible conditions.

Briefly stated, what I propose then, is:—

- a. To increase the strength of the Army Service Corps for war so as to provide sufficient transport for an over-sea expedition on a large scale, without denuding England of regular transport companies.
- b. To create a Volunteer transport to assist the Regular transport for purposes of home defence.
- c. To organise "2nd Line," i.e., civilian transport as a further assistance in the event of invasion.
- d. To provide Reserves of suitable transport horses at home and abroad.

Let us now proceed to examine this scheme in detail.

¹ During 1901 the transport service in India has been to some extent reorganised. The name has been changed from "The Commissariat Department" to "The Supply and Transport Corps." The establishment of British non-commissioned officers has been increased, and the pay and prospects of the officers improved. Cadres of pack mules, camels, and pony carts, capable of rapid expansion in war, have been formed, and a reliable census of suitable transport animals throughout Northern India is in course of preparation. "These measures give a nucleus of efficiently organised transport, which, though very small when compared with the total needs of the Army, is, nevertheless, superior to anything which India has previously had."—JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION for May, 1902, pp. 712-715.

I.—REGULAR TRANSPORT.

I want at starting to make it perfectly clear why, in organising our regular land transport for active service abroad and for home defence, we require one system only, and not two.

In the first place, it is impossible to draw a hard and fast line, and to say we want so much transport in case of invasion, so much for a possible over-sea expedition. True, we must decide on some fixed establishment for our regular land transport, and this must be based on our *probable* requirements at home and abroad; it must also be capable of rapid expansion at short notice, and of adapting itself to circumstances in any part of the world. The most likely time for an attempted invasion of this country will be when a large part of our Regular Army is already engaged abroad;¹ and we must bear this steadily in mind. But it may well happen that the circumstances of the hour require the greater part of our Regular Army to be thrown into an enemy's territory, and yet invasion be, for the time, practically out of the question. Or *vice versâ*, we may want every man we can lay hands on to resist an invader, and so keep all or nearly all of our regular troops in England. In the former contingency it would be absurd if regular transport organised for home defence were not to be available for service abroad; and, in the latter, it would be even worse if a proportion of our land transport (intended primarily for foreign service) were organised in a manner that limited its usefulness for home defence.

In the second place, two systems side by side, so to speak, could never work, even in peace, with the homogeneity which is essential to true efficiency and economy.

It is not necessary to argue the matter further; indeed, I fancy I may have laid myself open to the charge of setting up a figure of straw for the pleasure of knocking it down. However, I am convinced that at least no harm has been done in insisting at the outset that one system of land transport, and one system only, is what the British Army requires.

We have now to consider the amount of land transport which should be maintained in peace, so that in war we may have enough for an over-sea expedition, in addition to what may be considered necessary for home defence. We must not reckon on what is apportioned to meet the one case being available for the other.

The first point to be determined is the probable strength of the army we may send over-sea. Obviously this is a question which can only be answered approximately. At one period of the South African war we had enough men within the theatre of operations for 6 army corps, although previous to the war 2 army corps at most were all we anticipated being able to place in the field abroad. Now I believe we are to be able theoretically to send 3 army corps abroad without interfering with our arrangements for home defence. But does anybody suppose for a moment that in a war with one of the great Powers 3 army corps would be enough? We might want 6, or we might want 12; and, given a little time, I believe we could get them. But the country is not going to pay for the maintenance of 12 army corps in peace, nor even for the transport of 12 army

¹ And granted always that we have, at least temporarily, lost the command of the sea.

corps; and so we must make the most of what we can get and be thankful for small mercies. We can reasonably ask for land transport enough for the 3 army corps available for foreign service, and for at least one of the 3 remaining for home defence; and we must organise it in such a manner that it can be very largely increased at short notice. Here I am confronted by a serious difficulty. The peace strength of a transport company on the higher establishment is 62 of all ranks;¹ the war strength is—what? There are two official publications dealing with this matter, "War Establishments" and "Manual for Field Service, Army Service Corps." The latter is the older (1889), and is besides under revision, therefore we need not consider it. There is one notable difference between the two books. In the former the tables show the "Distribution of 1 Company, Army Service Corps, employed with"; while in the latter the term *Supply Column* is substituted. Each supply column includes the head quarters of a company, and therefore it may be urged that the distinction is merely theoretical; but I submit that the principle underlying the change of terms is a most important one. It amounts to this: that in the field the transport company is no longer a tactical unit, and that therefore its war strength need not depend on the particular duties it may be called upon to fulfil in any one supply column. No doubt the older scheme—that of having a complete transport company for each division, brigade, etc., etc.—has been abandoned with regret; in theory it left nothing to be desired, but in practice it meant having many war establishments, and was altogether too complicated to render mobilisation easy. Besides, supposing that each company were sent abroad exactly according to its establishment, how long would that last? After a few weeks' campaigning the companies would be all sorts of strength, bearing very little resemblance to their original establishments. This is theory: how does it tally with practice? At the beginning of the South African war we sent out a complete army corps from home. Here was a chance for the transport companies to complete to war strength. But they did nothing of the sort! Directly war was declared, practically the whole of the transport branch of the Army Service Corps—ridiculously weak for its work, especially in officers—was hurried out to South Africa *on a peace footing*. Possibly there was no time to complete the elaborate arrangements laid down by regulation, or the expected duration of the campaign was held to render them unnecessary; in any case reservists and reserve equipment were alike left behind. It is not within my province to criticise what took place;² I merely wish to emphasise the fact that the regulations contained in the "Manual for Field Service" were allowed to remain a dead letter.³ I do not think then that logically I shall be guilty of exaggeration when I suggest that if there had been a fixed war establishment for the transport company, irrespective of its particular duties, such establishment could and would have been quietly completed without any time being wasted.

¹ See Table A.

² It was surely a little rash to send the Army Service Corps out in one ship. I often wonder what would have happened if the "Bræmar Castle" had gone down, or had even been delayed.

³ To some extent they were followed later, in Natal at any rate, but only by the employment of natives.

At any rate I maintain that in a European war we shall require transport companies of considerably greater strength than 62 of all ranks; and that a fixed war establishment is absolutely necessary.

It must not be overlooked that the strength of a supply column depends, not only on the number of troops which it has to feed, but on the number of days' rations per man (and horse) required to be carried; and this last depends on many things—the nature of the operations, character of the country, distance from base, etc., etc. So that it seems to me impossible to lay down that the strength of a supply column with (say) a cavalry brigade shall be so-and-so, and with an infantry division something else. By all means let "War Establishments" be used as a guide under normal conditions; but let it be thoroughly well understood that the more elastic we make our transport, and the less we tie it down to hard and fast rules, the easier will the task of feeding troops in the field become.

My conclusion then is this: that while the supply column, subject to certain general rules, must vary in strength according to circumstances, the Transport Company should have a fixed war establishment just as every other unit of our Army has.

Now what is this establishment to be? Before we can answer the question there are one or two points that require consideration. In any unit where the difference between the peace strength and the war strength is considerable, the number of officers and non-commissioned officers in the former must be relatively large. Also, as supply columns will vary greatly in strength, the transport company should be capable of being split up, if necessary, into several bodies, without the whole losing cohesion as an administrative unit.

According to "War Establishments," the strongest supply column—I am of course only concerned with the transport portion of it—is that for "Corps Troops," with a total (exclusive of officers) of 129 of all ranks;¹ and the weakest is "An Infantry Divisional Supply Column," with a total of 82. But stronger and weaker respectively are "A Transport Section of a Supply Park," 173;² and "A Bearer Company," 36. Now for reasons which will be presently apparent, I shall increase the 173 to 236. I divide my company of 236 of all ranks (including officers) into four divisions (sections is as good a name as another), each section after allowing for a "company staff," being 58 strong.³

Let us see how such a company would adapt itself to the requirements of "War Establishments."

Corps Troops Supply Column requires	129 of all ranks, ⁴ say $174^5 = 3$ sections.
Infantry Divisional Supply Column requires	82 of all ranks, say $116 = 2$ sections.
Infantry Brigade , , ,	103 of all ranks, say $145 = 2\frac{1}{2}$ sections.

¹ I have not included "personnel detached" for obvious reasons.

² The transport of "an Auxiliary Company for Lines of Communication" is larger, but only when civilians are included.

³ See Table B.

⁴ Exclusive of officers.

⁵ Includes officers and additional non-commissioned officers and men.

Cavalry Brigade Supply Column requires	104 of all ranks, say $145 = 2\frac{1}{2}$ sections.
One Section Supply Park	„ 173 of all ranks, say $232 = 4$ sections.
One Section Field Bakery	„ varies slightly, say $29 = \frac{1}{2}$ section.
Bearer Company	„ 36 of all ranks, say $58 = 1$ section.

Other "units," such as "Personnel detached," could be treated in a corresponding manner; while to avoid waste or to make up deficiencies men could be transferred from one section to another without difficulty. In short it will be found that a transport company, composed of 4 sections, each 58 strong, will readily adapt itself to tactical requirements without disturbing existing administrative arrangements.

Table B shows in detail the proposed war strength of a transport company. The numbers of the different ranks, of the horses and wagons, are based on its probable duties in the field according to the requirements of "War Establishments." That is to say one company could furnish transport for:—

- a. Supply Park, one section, *or*
- b. Corps Troops, and one Bearer Company, *or*
- c. Two Infantry Divisional Supply Columns, *or*
- d. Cavalry (or Infantry) Brigade Supply Column, Field Bakery (one section), and Bearer Company, *or*
- e. Field Bakery (eight sections), *or*
- f. Four Bearer Companies, etc., etc.¹

exclusive of staff and supply officers, and of supply non-commissioned officers and men.

What in short is recommended, is simultaneous mobilisation of transport and supply companies independently of one another; a fixed war establishment for both; their distribution on the spot instead of previous to mobilisation; more margin for waste; a simple administration; and far greater tactical elasticity. It must never be forgotten that, owing to the ever-changing problems of war, more transport may be required for the several units than is provided for in "War Establishments." In theory, however, and allowing for a margin over and above that given in "War Establishments," the suggested alternative duties could be carried out by a company 236 strong.² This strength is based upon several considerations:—

- a. The maximum which it is considered could be conveniently treated as an administrative unit.
- b. The minimum which could be most readily split up as already described without undue waste; bearing in mind that all companies should have a common war establishment.

¹ There are many "details" for which transport is required in the field, and for which it is impossible to arrange except as the necessity arises.

² The company head quarters would be with the strongest supply column, and therefore in many supply columns there will no longer be "company head quarters" as now detailed. A saving in officers is thereby effected.

- c. An increase in the number of non-commissioned officers and men which experience suggests as advisable.¹

The recent formation of "mechanical companies" is another disturbing factor in calculating the war strength of an ordinary company. Is it intended to employ the former in the 1st Line? and, if so, with which supply columns and to what extent? These questions are not yet ripe for solution—probably the answers to them will always depend to some extent on the exigencies of the moment—but in any case they seem to me to furnish another argument as to the hopelessness of attempting to fix the exact strength of a supply column beforehand.

A few words of explanation as to the manner in which the additional numbers for war are to be obtained will here be necessary.

Officers.—At present a transport company in peace very frequently has only one officer instead of its proper establishment of two; this undoubtedly is a mistake which, it is to be hoped, will be rectified in future. Supposing, however, that a company is up to its proper peace establishment, three additional subaltern officers will be required on mobilisation, and these can be drawn from those carrying out supply and barrack duties at home stations, the vacancies thus made being filled by retired Army Service Corps officers and by retired quartermasters of other branches of the Service.

Warrant Officers.—Three additional per company will be required. Can be obtained partly by calling in all those not already employed with the service companies, and partly by promoting senior non-commissioned officers. It is to be noted that mobilisation means at the present time, and always must mean, increased promotion to warrant rank as well as to all grades of non-commissioned rank. It is, indeed, to a great extent by promotion, as well as by drawing on the Reserve, that we must look to completing our establishments for war.

Non-Commissioned Officers.—A comparison of Tables A and B shows that the following will be required additional on mobilisation:—

Sergeants	...	...	...	...	...	7
Corporals	...	...	...	...	...	5
Second and lance corporals	...	...	...	...	...	7
Artificers, staff sergeants	...	...	...	...	...	4 (or 5)
Corporals	...	...	...	...	...	5 (or 4)

As just stated, these must be obtained by promotion and from the Reserve. For a "little war," when only a certain number of companies may be required, the companies remaining at home might be drawn upon; this is convenient, but the principle is a bad one. Good artificers are relatively difficult to get; fortunately the additional numbers required are small, and need not, I think, be increased. The number of sergeants given above includes 2 extra in place of a second company sergeant-major and company quartermaster-sergeant, 2 each of these last being required under (c) according to "War Establishments," but only 1 each (with the company head quarters) according to Table B. Further, it will be found that the total number of non-commissioned officers could be reduced to 20² (5 per section), provided that the numbers of the different ranks as given in "War Establish-

¹ Should there at any time be any excess of present requirements, it will not be difficult to find them useful employment.

² Exclusive of artificers.

ments" be disregarded; i.e., that in certain cases sergeants do the work of corporals and *vice versa*; but experience has proved that *more* and not *less* non-commissioned officers are invariably required in the field. For this reason, therefore, I advocate the higher total (28); and also, as I have already said, the numbers given in "War Establishments" have only been taken as a general guide. Another point to be remembered is that we must be prepared for casualties; sickness is more to be feared than the enemy's bullets, even among the fighting portion of an army.

Men.—Supposing a company to be distributed as *d*, the numbers of artificers, exclusive of non-commissioned officers (with whom I have already dealt) will, according to "War Establishments," be—

Wheelers.	Collar Makers.	Shoe and Carriage Smiths.
5	6	13

These are the numbers I have suggested¹ for the war establishment of a company, because in all other cases except *d*, a substantial increase is thereby shown in the numbers of artificers now considered sufficient, and I have not thought it necessary to increase these numbers for the one exceptional case. Only one trumpeter will be needed: with the company head quarters.

It will be observed that with regard to drivers a considerable increase is recommended; for the two following reasons:—

- a.* The present numbers do not, in my opinion, allow sufficient spare men to replace casualties.
- b.* There should be sufficient men to defend the wagons and stores from desultory attacks by small parties of the enemy, who may elude the usual escorts (which would ordinarily endeavour to fight at some distance from the convoy or laager).

Incidentally, I consider that the rank and file ought to be armed with the rifle instead of the carbine, and that much more attention should be paid to musketry instruction. A few men trained as signallers would often be found of great assistance on convoy duty.

The additional men required on mobilisation would be drawn entirely from the Reserve.

Horses.—It should not be a difficult matter to obtain the extra horses required on mobilisation. There are plenty of firms in this country employing a large number of animals suitable for draught work who would, no doubt, on payment of a small annual retaining fee, agree to supply a given number of horses when required for war. If a proportion, at any rate, of such animals were employed annually at manœuvres, so much the better. I believe that a system of this kind, though it would add a little to the Estimates in peace, would save the country a lot of money in the long run, besides greatly facilitating mobilisation.

I should like to see remount dépôts established in our principal possessions abroad, in addition to those at home, so that in the event of an over-sea expedition, a company could complete its establishment on disembarkation with animals used to the climate and conditions of that part of the world. The waste of horseflesh on active service is

¹ See Table B.

necessarily very great, and the transport must be kept well supplied, or the soldier will suffer in proportion.

Vehicles.—Little need be said about vehicles and equipment. There must be enough of both forthcoming on mobilisation, and this is chiefly a matter of money. Probably for a European war our general service wagons would be found suitable for transport of the 1st Line; certainly they are the best military vehicle for this country. For an over-sea expedition, however, other kinds of vehicles would almost certainly be required; and it would be well therefore to form reserve stores of wagons or carts built on the lines of those in ordinary use in various possessions abroad, for Imperial as well as for local needs. Such vehicles would be suitable for use in the neighbouring foreign States; and so we should be equally well prepared for an over-sea expedition operating from no matter what base, or for home defence.

One other point: Wagons and harness (the latter especially) deteriorate by being kept continually in store, however well cared for. Therefore, I strongly advocate that the reserves of both in mobilisation stores should be used (preferably on manœuvres) not less than once a year, whenever possible; if not by the unit to which they properly belong, then by some other. An annual "turn-over," though it might result in a little paint being scraped off and minor damages, would not only prevent deterioration, but would also discover weak points; better now than when face to face with the enemy.

I have devoted considerable space to the organisation and strength of a transport company, because in the general scheme for our land transport which I am about to put forward, the company is, as now, to be the administrative unit; and therefore it has been absolutely necessary to decide in the first place the part it will play on mobilisation. I confess that this, the foundation of my scheme, makes somewhat dull reading, depending as it does, to a great extent, on figures which are only tentative, and which are indeed largely a matter of opinion; nor is the result, as briefly set down, at all commensurate with the labour involved. What I have tried to prove is the necessity, or at any rate the advisableness, of a fixed war establishment expanding from a fixed peace establishment; and I have based the former on existing regulations with certain modifications suggested by experience, and always with the proviso that the numbers of the different ranks can be modified without affecting the principles they illustrate.

I do not pretend that this is a perfect scheme, far from it; but I do assert that it is based on sound principles. Its advantages, perhaps, can be best gauged by a comparison with the present system. By that system each transport company must be allotted to its field unit *before mobilisation*, as the strength of each varies accordingly, and there is little or no margin for unforeseen circumstances. If my suggestions are carried out, mobilisation will be greatly simplified, and the distribution of the companies will rest—as it surely should—with the general commanding the army in the field.

Another point: A transport company under my scheme will be composed entirely of transport personnel: the supply companies will contribute contingents to the different columns as required. This does not imply a separation of the two branches of the Army Service Corps; but by making each, up to a certain point, independent of the other, greater elasticity will be given to the whole.

The more one reads military history the more one must recognise the necessity for an ample train. Commanders of all nations and in

all ages have been hampered in their movements, and have seen their best laid plans miscarry owing to insufficiency of transport. Without transport the most powerful armies are deprived of their mobility, and in these days immobility spells defeat. In South Africa the other day when, as sometimes happened, our troops had not full rations, the reason was not that there was any lack of food in the country, but because there was either not sufficient transport to carry it to the troops, or else that the transport was not of good enough quality to keep up with rapidly moving columns. The transport of an army must be of good quality, and there must be plenty of it. Especially will this be the case if England is ever seriously invaded. As I have already shown, we must be prepared for an invader when a large portion of our Regular Army is abroad, and therefore we want enough transport for a large over-sea expedition, and a nucleus at least for our home-defence army as well. It seems a curious thing at first sight that, as a rule, the invaders fare better than the invaded with regard to supplies generally. The former have not of course so tender a regard for the susceptibilities of the inhabitants, and, moreover, they can make their calculations beforehand with tolerable accuracy as regards the number of men and horses they will have to feed. The defending forces, on the other hand, are very heterogeneous, becoming at length the manhood of the nation in arms. The difficulties of feeding great masses of undisciplined men become enormous, and the task set the transport almost insurmountable. So it was in the Peninsular War before Wellington took the offensive; and history repeated itself in the German invasion of France in 1870. If England were invaded we should experience much the same embarrassments. The greater part of our regular transport would (probably) be abroad, and we should have to rely on the small proportion left—a small proportion in any case compared with the large number of combatants to be fed. We should, in fact, under present conditions, not have nearly enough transport for our armies in the field; and it must be our business in peace, as far as may be, to diminish this serious deficiency. Now the only way in which any part of an army can be rapidly and largely increased on the outbreak of war is by the maintenance of a large Reserve. Our transport reserve at the present moment is not nearly large enough. The only way to create a large reserve from a comparatively small peace effective, is to make the period of service with the colours as short as possible, compatible with a high enough standard of efficiency, so that a large number of men shall pass through the ranks in a comparatively short time. At present our transport men are enlisted for 3 years with the colours and 9 in the reserve. With certain exceptions, to be considered later, I advocate the reduction of the former term to 2 years. I can fancy the indignation with which the reduction of colour service to so short a period will be received, especially perhaps by young officers of transport companies. Of course there are disadvantages: one must sacrifice something. Perhaps it will be well if I briefly consider the two most reasonable and likely objections to my scheme before describing the advantages I claim for it. First, I shall probably be told that with only 2 years' service we shall find it very difficult to get non-commissioned officers. I shall reply to this objection more fully later on; for the present it will be sufficient to state that a large number of young non-commissioned officers in the Army Service Corps do, as a matter of fact, extend their service in their second year. Then I shall expect to hear

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that two years is much too short a time in which to train a man to become an efficient driver. To this I return an emphatic negative. If a man is not fit to take charge of a pair of horses after six months' training, he will never, in my opinion, make a good driver. I do not say that at the end of six months he is so quick at his work, can clean harness so well, or drive so well as he ought to be able to later on; but he will be (and is as a rule) good enough for all practical purposes.

I have already stated that more attention should be paid to the musketry instruction of the transport personnel. The course for recruits and for trained soldiers should be assimilated to that of the infantry, and it should be looked upon as one of the most important points of a driver's training—not as now, as something that can be (and often is) put on one side as a detail of little importance.

It is obvious that with shorter service and more musketry something must go. That something should be a great deal of the present drill, both mounted and dismounted. The former is useful as teaching men both to ride and to drive, and to keep their wits about them; the latter to teach them to hold themselves and move like soldiers; and both, of course, are not only necessary in quarters and in the field, but they are at the very foundation of discipline and of prompt and instinctive obedience to orders. But, without impairing their usefulness in any of these respects, both might be very greatly simplified by reducing the number of "movements" to a minimum, and by eliminating all that are of no practical value. I believe that the "Army Service Corps Drills and Exercises" is about to be revised, and I hope the opportunity will not be lost of cutting down the drill very largely.

I have referred to certain exceptions in the proposed 2 years' colour service for our land transport: they are as follows:—

- a.* Any man who, in the opinion of the officer commanding his company, is not, at the end of a year, an efficient soldier in every respect, should remain with the colours for a third year. Such men would be the exception, because I would give officers commanding companies power to summarily discharge any man during his first six months' service who appears unlikely to make a good soldier.
- b.* Any man who accepts a stripe should, by accepting it, become a "3 years' man": or the period might be increased to 4 years or longer with advantage. This would dispose of the difficulty of obtaining non-commissioned officers; for although, as I have said, many extend their service in the second year, yet even so it is not always easy to get sufficient men of the right stamp.
- c.* Finally, artificers should be treated in the same manner as non-commissioned officers.

Put in another way, the period of enlistment would remain 3 years with the colours, except for drivers found to be thoroughly efficient at the end of a year—which, as a matter of fact, would be the case with the large majority. Hence it follows that the Reserve would be largely increased without loss of efficiency and at moderate cost.

At present, transport companies are moved every 2 or 3 years, at considerable expense to the country, and without, so far as I am aware, any particular advantage. An officer is rarely more than 3 years in the same company, so that, as a rule, he does not move more than once with his company, often not at all. In any case, however, he gets a change of station not less than every 3 years at home: at most foreign stations the period is 5 years. Non-commissioned officers are usually moved on promotion, that is to say, promoted into another company. With men enlisted for 2 years some might experience one move, but certainly fifty per cent. would be discharged at the station to which they were originally posted from the dépôt. A company, on changing station, leaves its horses and wagons behind, and takes over both from the company it relieves at its new station. Practically, therefore, when a company moves, only a very small proportion of the personnel is the same as when it moved last. Why, then, move companies at all during peace? There is no reason for doing so, apparently, except custom; and I am of opinion that a far better plan will be to keep companies always at the same station. By doing so we shall reap certain solid advantages:—

- a. A company territorial system will be established.
- b. No interchange of horses and wagons between companies will be necessary.
- c. The mobilisation equipment and stores of each company can be kept at the permanent company head quarters.
- d. Reservists will know exactly where they will have to go on mobilisation.
- e. A considerable saving in the transport vote will be effected.

To consider these points in detail.

- a. The territorial system has proved a great success with the infantry, and its extension to the train is therefore recommended. Recruiting will certainly benefit, for men like to serve near home, with no fear of being moved to a distance; and the advantages of the Army will be brought in a practical form to the notice of many people to whom they have hitherto been a sealed book. Of course, if a man, for reasons of his own, prefers to serve away from home, there will be nothing to prevent him enlisting in some other company. Enlistment, in fact, will be for a particular company or for "general service"; and I think it may be taken for granted that sufficient men in the second category will be forthcoming to fill vacancies in companies which fail to attract enough local recruits.
- b. The present system of transferring horses and wagons from one company to another is a bad one. Human nature being what it is, neither officers nor men can be expected to take quite the same amount of interest in them which they would otherwise do.
- c. The advantages here are apparent. Mobilisation will be far quicker because far easier. The officer commanding the company should *always* be in charge of his own reserve stores and equipment, and will, consequently,

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become personally interested in their condition and preservation. He will be able to make himself acquainted with all details concerning their issue on mobilisation, so that when that day comes it will find him fully prepared. The fact that his responsibilities will be considerably increased is, in my opinion, an additional argument in favour of my suggestions.

- d. I would have reservists belong to their late company, and not, as now, to the Corps generally. This, again, will assist mobilisation enormously, for every man will know exactly where to go, probably he will not have to go far; and the surroundings being familiar, even to the faces of old comrades, he will quickly fall into his old place in the company.
- e. The saving effected under this head will go towards meeting the increased expenditure due to shorter service.

The company territorial system which I have formulated will only be practicable, at any rate in its entirety, if no transport companies are normally stationed abroad. At present there are none abroad except in South Africa, but, for the late war, all would be at home. The abnormal state of affairs in South Africa, however, will probably continue, as regards the transport, for some time longer; and it will be well to see, therefore, if the accompanying disadvantages (*i.e.*, the necessity for keeping regular transport companies out there) cannot be avoided. I think they can. Native transport, as regards drivers, animals, and vehicles, is best adapted to the peace conditions of the country; and, in fact, the native element has been, and is, largely predominant. Army Service Corps companies, as we know them at home, would, in South Africa, be to a great extent useless, and certainly wasteful. The remedy is the formation of local transport companies under Army Service Corps officers, with a certain number of carefully selected non-commissioned officers. Even if it be considered absolutely necessary to keep some Army Service Corps transport companies in South Africa for the present, a beginning can be made with the territorial system at home.

I am of opinion that officers and warrant officers should remain at least 3 years with the same company, and junior non-commissioned officers should be promoted in their own companies as far as possible.¹

It will be apparent that if men are enlisted for 2 years, and go to the Reserve for 10 more, there will in time be more Reservists available than are actually necessary for completing their respective companies to war strength. Consequently, directly a company is mobilised and moves away to its destination, the remainder of its reservists can be called up and formed into a Reserve company, being utilised either to fill up gaps in its service companion as occasion may require, or in the case of invasion to take the field as a separate unit. The officers of such reserve companies would be taken from the Reserve of Officers; their commanders should, if possible, have served in the Army Service

¹ The necessity for promoting non-commissioned officers throughout the corps will to some extent weaken the territorial system, but it cannot be avoided. At any rate the practice will help to keep companies at different stations in touch with one another, in itself no small advantage.

Corps. A reserve company would ordinarily fulfil the functions of a dépôt; but as it would have plenty of time to shake down, there is no reason why it should not ultimately be fit for field service. Its horses and equipment would be supplied from reserve stores kept for that purpose, but such stores should be totally distinct from those of the company proper.

Existing dépôt companies should be quartered at stations by themselves; and each one should "feed" a certain number of, and always the same, service companies.

I submit that the foregoing proposals for the better organisation of our regular land transport do not upset existing arrangements, but merely adapt them to what I conceive to be our future requirements. I do not advocate any increase in the present peace establishment, but I insist on the necessity of providing a large and rapid expansion for war. To ensure this, I propose, with certain exceptions, to reduce the period of service with the colours from 3 to 2 years. This, while adding very largely to our war strength, would not sacrifice quality to quantity; and the net extra expense would be small. I believe the scheme to be both simple and practical, and to apply equally to our requirements for home defence as well as to over-sea expeditions.

It may be of interest here to note that in the German Army over two-thirds of the men of a transport company are enlisted for six months only. To a considerable extent quality is thus sacrificed to quantity; but the supreme necessity of an ample reserve for war is fully recognised, and hence the guiding principle is to pass a large number of men through the ranks in the shortest possible time.

ii.—VOLUNTEER TRANSPORT.

According to "War Establishments" the transport required for any army corps and one cavalry brigade is as under:—

—	Officers (transport only).	N.C.O's and Men.	Total.
Army Corps	32	2,155	2,187
Cavalry Brigade	2	164	166
6 Bearer Companies	—	216	216
10 Field Hospitals	—	210	210
Grand Total	—	—	2,779

This absorbs 13 transport companies, without providing for the bearer companies and field hospitals, which we may put down as requiring 2 more, making 15 altogether.

In the scheme I have suggested we shall want:—

	Sections.
Army corps (including 6 bearer companies) ...	46
Cavalry Brigade	2½
Personnel detached (including 10 field hospitals) ...	14
Total... ..	62½

say 16 transport companies, representing some 3,776 officers, non-commissioned officers, and men. Both the above calculations are

approximate; but while the second only requires 1 more company than the first, the total of all ranks is very much larger, an increase in fact of 1,000. If this increase appears excessive, let two facts be remembered:—

- a. That the lesser total of 2,779 means companies of all sorts of strengths and supply columns, which a few casualties will reduce to dangerous weakness.
- b. That the higher total of 3,776 means companies of equal strength, an ample margin for casualties, and—most important of all—enough men left at the base to fill up the gaps which sickness and death will make all too soon.¹

Taking the lower of the two estimates, we require 15 transport companies per army corps and cavalry brigade; and consequently for 3 army corps (the force I have tentatively suggested as the strength of a possible over-sea expedition) we want 45, and this number is exclusive of depôts, hospitals, and duties on the lines of communication generally. If we add only 5 companies for those services, we see we may want at least 50 transport companies abroad; and as the total establishment of service companies at present is 62, we are left with but 12 for home defence—not enough for the 4th, 5th, and 6th Army Corps, to say nothing of the great proportion of the Militia and Volunteers. In case of invasion we shall certainly require more than 3 army corps at home, we shall want, in fact, every man we can lay hands on; and thus we are forced to the inevitable conclusion that we have not nearly enough transport.² I want to make this quite clear before suggesting a remedy, otherwise I may be accused of wishing to increase our transport unduly and without regard to what is really necessary.

We have only, I think, to consider for one moment the forces which we should necessarily put in the field in case of invasion to stand fully convinced of the crying need for more transport. It cannot be too often or too strongly insisted upon, that for home defence—as for an over-sea expedition—we require an army (or perhaps it would be more correct to say armies), and not a motley collection of armed men, however well trained. Yet, what are the facts? That our Militia and Volunteers are sadly deficient in cavalry and artillery; while transport (if we except Volunteer brigade bearer companies) is absolutely non-existent. I wonder if one Englishman in a hundred—or one in a thousand—realises what this means? It means that the bulk of our reserve and auxiliary forces, those forces to which is principally entrusted the defence of the United Kingdom, could not, as at present constituted, keep the field for 48 hours. That an army must have transport—regularly re-organised and properly equipped transport—to enable it to fight, is such a self-evident fact, that it is astounding matters have been allowed to remain so long as they are. There appears to be an impression that transport can easily be organised as required, a most dangerous fallacy; and that there is enough civilian transport in the country for all military requirements. The latter is, indeed, partially true: but apart from the fact that civilian transport cannot be used in the 1st Line, a great deal of preparation is needed to render it fit even for the 2nd Line. The

¹ See footnote to Table B.

² I have alluded only to the numbers of men as illustrative of my contention; equally we are deficient in horses and equipment generally.

utter confusion into which business in this country would be thrown if an invader ever set foot on English soil is, I fear, not sufficiently realised. I am firmly convinced that nothing short of a universal panic would prevail; and, assuredly, that will not be the time to begin organising one of the most vital parts of a modern Army. It is true that many, if not all, Volunteer battalions have—on paper—some civilian transport available on mobilisation, but in most cases this only consists of the promise of a few wagons or carts; and, at best, is “regimental” transport and, consequently, not available for general supply purposes. On the other hand it may be urged that the general dislocation of business consequent on invasion will render a large amount of transport available for military purposes. This is, I think, true; and I shall refer to it again when considering the provision of 2nd Line transport. But 1st Line transport will also be required, and, therefore, to supplement what we have, and which I have shown to be quite inadequate, I want to see Volunteer transport companies brought into existence without delay. This will not, I think, be difficult, nor need it be expensive: in any case it is *necessary*. If a man were to build a dam and, for the sake of economy, were to leave part of it so weak that a heavier flood than usual would break it down, we should call that man a fool. What then is to be said of a nation that maintains thousands of fighting men, but neglects to provide the means of feeding them during a campaign?

As a beginning, I would raise transport companies for certain of the Volunteer infantry brigades, and gradually extend this system until every brigade has its transport company. Whether these brigades would take the field as such in war is immaterial; the transport companies would be available for general duties as found necessary. I hold this to be a better plan than raising independent transport companies without any territorial or other connection, because, in the first place, I look to the brigade to supply many recruits for the transport ranks, that is to say many (the more the better) of the drivers will have had some previous military training; and in the second place because the brigade transport company can be more readily and practically tested in its duties in camp and on manœuvres, where indeed, by lessening the employment of civilian transport, its training will result in a saving of expense, and so reduce in part the cost of its maintenance. Short service for the Volunteers is not feasible, because in two years men could not receive anything like sufficient training in transport duties, and therefore I consider that no attempt to establish a Volunteer transport reserve should be made beyond registering the names of all men on retirement. If such men were made liable to serve in case of invasion for, say, 5 years after retirement, I do not suppose that recruiting would suffer in consequence; and a man with only a very small amount of military knowledge is better than a man with none at all. Practically, however, the Volunteer transport company will have to take the field at peace strength, and consequently it should be kept, within limits, as strong as possible in peace. Those limits should be the establishment of a regular company at war strength, *i.e.*, 236 of all ranks;¹ but I do not advocate treating the establishment of horses on similar lines. The horse question with Volunteers is never an easy one, and therefore the

¹ As an infantry brigade only requires 2½ sections, *i.e.*, five-eighths of a transport company (see p. 389) a total of 145 of all ranks, with fewer horses and vehicles, would suffice.

fewer horses we can get on with without sacrificing efficiency the better. I would give to the Volunteer transport company the same number of vehicles as a Regular company at war strength, with the exception of the ambulances, as bearer companies already exist.¹ The general service wagons should be allowed 2 horses each, the other vehicles 1, thus making a total of 80 horses per company. A few spare animals in addition might be taken on manœuvres. The horses should be hired in the same way as for Volunteer batteries²; and I do not suggest that it would be necessary to hire as many as 80, except on special occasions; for ordinary drill purposes a very much smaller number should suffice. Complete equipment for the full number of 230 horses should be kept in store, and all of it should be used in turn. Practically nothing then would be required on mobilisation except the 150 additional horses, and those would be obtained from the remount dépôts if possible, or purchased, or hired. If our 2nd Line transport be properly organised, the last course could probably be adopted. Men accustomed to horses would, of course, make the best recruits, for their military education would be, so to speak, already begun. The obtaining of reliable non-commissioned officers would be (as with all branches of the Volunteer force) the chief difficulty, but it is a difficulty which can at any rate, to some extent, be overcome by careful and systematic training. The company sergeant-major, company quartermaster-sergeant, and at least 2 sergeants (1 for each of the 4 sections would be preferable) should belong to the Army Service Corps; and as the position of those men (especially in country districts) would be a responsible one, they should not only be selected with great care, but should be made to understand that their future promotion would depend on the efficiency of their company or section. For the present, at any rate, it is quite impossible to spare enough Army Service Corps officers to give an adjutant to each company, or even group of companies, unless of course only a few are raised to start with,—and even then it would be better to begin as we mean to go on, so I suggest the appointment of a few "Inspector-Generals of Auxiliary Transport," graded as staff officers. These officers should make constant inspections of all Volunteer transport companies in their several districts, not only in the manner that "inspections" are generally understood (though occasional formal inspections, "as strong as possible," should be held); but they should devote most of their time to seeing that the instruction of individuals was being carefully attended to, and more particularly that the Regular non-commissioned officers were in all respects fit for their positions.

I believe that a great deal could be made of Volunteer transport companies worked on these lines. As soon as a man could ride and drive properly—and it is to be hoped that a large proportion of the recruits would have some knowledge of the latter at least on joining—a great deal of useful instruction could be given in the winter evenings without horses. The care of harness, taking it to pieces and putting it together again; the loading of wagons, mounting and dismounting them; a little foot drill; and the care and management of horses in

¹ The St. John Ambulance Brigade may be relied upon to render valuable assistance.

² A Volunteer battery of position consists of 4 guns and 3 wagons (horsed), say 22 to 36 horses (the number depending on the class of horse employed), and the annual allowance varies from £100 to £136.

quarters, in camp, and on the march: all these subjects could be progressively taught with profit both to pupil and teacher. Lectures to the non-commissioned officers explanatory of the principles on which our military transport is carried out would be time well spent. Shooting should, of course, not be neglected; in fact a Volunteer transport company, with a little shaking down, should be able, in a very short time, to take its place as an integral portion of our home-defence army in case the possibility of invasion ever becomes a dreadful reality.

Each Yeomanry brigade should also have its Volunteer transport company.

I suggest that Mark IV. wagons would be best suited to the Volunteers, partly because a lock-under fore-carriage is easier to drive than one with a quarter-lock, and partly also because, having a smaller turning circle than Mark VII., they are better suited to our narrow English lanes.

Volunteer transport companies would cost money, but surely the money would be well spent? Their existence will enable our citizen army to keep the field, which assuredly it is not capable of doing at present, and so add enormously to the armed strength of this country.

iii.—2ND LINE TRANSPORT.

There is a considerable diversity of opinion as to the duties of 2nd Line transport. This is, perhaps, not to be wondered at when we remember that even among soldiers a great deal of misapprehension exists as to what 2nd Line transport is. The reason of this, no doubt, is because there are so few books on the subject of military transport; but this again is, I fear, to some extent owing to the fact that there has been no great demand for them. The subject of land transport is, in fact, of interest only to the few; the majority either ignore it altogether or look upon it as a matter of minor importance—as a service which can be easily improvised when occasion demands. Never was there a greater error; and let us hope that with the present determination to mould the Army into an efficient fighting machine, the land transport will in future be given the consideration which its real importance merits.

I can recollect attempts to define 1st and 2nd Line transport according to the stores carried by each. To thus draw a distinction between the two, or to define either by such a method, must necessarily result in failure because the premises are unsound. It is not *what* is carried, but *to whom* and *whence*, that marks (or should mark) the difference between two classes of transport which, with sound organisation, are necessarily distinct. I must, at the same time, admit a certain diffidence in endeavouring to distinguish between the two; not so much on account of any adherent difficulty in so doing, as because under certain conditions impossible of accurate classification, their duties overlap. Broadly speaking, 1st Line transport may be said (in the words of Sir John Burgoyne already quoted) to consist of transport which is "brought within range of the enemies' fire"; and 2nd Line transport, of transport which does not penetrate within the fighting zone. The first should consist of military transport pure and simple, the second of civilian transport under military control.

This matter of military control over transport which otherwise is constituted on wholly civilian lines, is really at the root of the matter. Without it the greatest irregularities may prevail, especially at a time

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of stress and uncertainty; yet if, on the other hand, too rigid an adherence to military forms be insisted upon, the elasticity of its working may be seriously imperilled. The great object with 2nd Line transport is to work it on lines familiar to the people: to sweep into the military net, in fact, the ordinary transport organisation of the country without disturbing its internal routine.

The only attempt to employ civilian, *i.e.*, 2nd Line transport, on a large scale was made during the summer manœuvres of 1898. This indeed was a necessity owing to the number of troops engaged. The arrangements were loudly condemned at the time by the troops, and praised with some reservations in the official report of the manœuvres. It was confidently asserted on the one hand that had the weather been wet, or had the manœuvres lasted a single day longer, a complete breakdown must have followed; on the other hand, it was officially stated afterwards that on the whole the civilian transport had proved a success. These statements, much at variance as they may seem, are not irreconcilable.

Two fundamental mistakes were made at the outset.

- a. The civilian transport was employed as 1st Line transport, that is, it was charged with the actual distribution of supplies to the troops, instead of fulfilling its true rôle of filling up the dépôts in rear.
- b. The contracts were so drawn up that sub-letting could be, and, as a matter of fact, was, largely resorted to. Moreover, no steps were taken to insure the men employed being fully qualified for their work. Some of the drivers had actually never had anything to do with horses before: they were alike ignorant of how to put on harness, how to groom or feed a horse, and how to drive! In consequence, the officers of the Army Service Corps in charge of transport columns had very hard work to prevent a breakdown. It must be remembered, too, that the opposing forces were operating—as regards supply—from standing and interchangeable camps, a very convenient arrangement. As the weather was fine throughout the transport had everything made as easy as possible: but the margin of success was a very narrow one nevertheless.

On the other hand, the official report that the civilian transport had proved a success was on broad lines undoubtedly justified. It was proved, beyond doubt, that large bodies of men, without any military training whatever, with all kinds of horses and vehicles, could "keep the field" for a number of days, and could transport without any serious hitch large quantities of stores. If all the men had been accustomed to horses; if the horses themselves had in all cases been fit for the work in hand; and, above all, if the transport thus constituted had been employed *only* in the 2nd Line, success would have been absolute. But it was peace, not war.

But of far greater importance than success or failure in this particular instance is the lesson to be learnt from the experiment. Here we had a large number of troops, let us say two army corps, operating under peace conditions as regards supply, with nearly the whole of the Regular transport available; and yet the employment of civilian transport on a big scale was necessary. As a result of the South African war we have about doubled the number of our Regular

transport companies; yet even supposing that all of them were available at home (and that we had Volunteer companies as well), should we have enough in the event of invasion? Even if we reply in the affirmative, we can only do so by admitting the necessity for a large addition in the shape of civilian transport; and thus we are left to the further consideration as to whether this civilian transport will be available in sufficient strength and in sufficient good order to meet requirements. It is a momentous question, and we cannot afford to allow the answer to be in the least degree ambiguous. Personally, I look upon this continual shelving of the problem of auxiliary transport as a danger to the country, and one the solution of which admits of no delay.

I do not seek to belittle the difficulties which lie in the way of a successful solution—a solution, that is to say, which shall be at once business-like and cheap—but we must remember (and in one sense it may be considered as entirely satisfactory, though not generally, I think, sufficiently realised), that a very large proportion of the “military” transport service in this country is carried out by civilians. We very rightly concentrate our Regular transport companies for purposes of training at a few of our larger military stations, leaving the executive transport work everywhere else to be performed by the railway and canal companies (generally at special rates), and by “contractors” (in the ordinary sense of the term), for road services, or by special local arrangements for short periods, and for certain specified work. This means that the majority of persons in this country who are ordinarily employed in transport work (I use the term “transport” here in its widest sense) are fully acquainted with the needs of the Army in peace. To bring home to them the needs of the Army in *war*, especially of war in this country itself, and to make provision for enabling them to put the knowledge thus acquired to practical use, is, it seems to me, the imperative duty of our war administration. Let the War Office take the nation into its confidence, and I, for one, am not afraid that the necessary expenditure will be cavilled at. The truth is that 2nd Line transport is an indispensable adjunct to every army in the field. In an enemy's country it must be, to a great extent, improvised, and, therefore, at a commencement of a campaign, military transport must often assist in the 2nd Line: time is on the side of the invader. At home we shall have, or at any rate we may have, no time; and the danger of unreadiness is appalling. But, at home, if we do our duty, 2nd Line transport need not be improvised, or rather, all preparations for its being formed at the shortest possible notice will have already been made. How is this to be done?

To begin with, there will be no lack of material. There are more than enough horses and vehicles in this country to meet all possible requirements, even after the Regular and Volunteer companies have been fully supplied, and (as I have already stated) the general stoppage of business consequent on invasion will place an ample number at the disposal of the military authorities. Even were it otherwise, that part of the Army Act relating to the impressment of carriages, would insure a sufficient supply. It may be noted that (except for regimental baggage and stores) carriages and animals can only be impressed in case of emergency, and that they cannot be seized unless an Order in Council for the embodiment of the Militia is in force. As the Militia would certainly be embodied at the first whisper of invasion, the legal

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provisions for obtaining the required transport appear to be ample. The Army Act authorises the police authorities to compile annually a list of all persons liable to furnish carriages and animals, giving numbers and descriptions of both. Copies of such lists should be furnished to every officer administering transport duties throughout the kingdom; and he, in turn, should render a return to the War Office showing the amount and quality of transport which could be collected at short notice at certain named places.¹ I further suggest the formation at the War Office of a "Civilian Transport Council" (of which the present "Army Railway Council" would become a branch), to administer this necessary portion of our home defence army. Much might be done by a central authority, working through the officers, administering transport duties in the various military commands. Places of assembly for 2nd Line transport could be fixed upon; the actual composition (leaving a margin for contingencies) of the several "companies" might be tentatively determined; and all stores and equipment likely to be required by them could be kept ready for issue on "mobilisation."² Nor should there be, in my opinion, any secrecy about these preparations. On the contrary, I should like to see the fullest publicity given to the scheme; and this, in time, might even lead to a friendly rivalry between the different "companies." It should be explained exactly what "impressment" means, and especially pointed out that in the event of invasion large numbers of the civil population would be thrown out of work, consequently the majority whose horses were impressed would be glad enough to enter the Government service, and to look after their property at the same time. Persons who show special interest, and those who employ a large number of horses, or are otherwise qualified, should be informed that they may consider themselves potential "conductors"; i.e., as having in the future certain powers and responsibilities above their fellows. Ample compensation, it should be explained, would be given for all losses and damage, and the pay would also be good.

I believe that if we worked on some such lines as these, "inspections" of 2nd Line transport "companies" could be held occasionally, and, if so, great interest would certainly be invoked; and this would lead to questions being asked, points debated; and, in short, an insight (rough and ready no doubt, but sound in the main) into the methods and requirements of army transport would be obtained by the public.

The increasing success which attends the annual cart horse parade in London is a matter for congratulation: why not extend the principles underlying it to the country generally, but based on military transport needs? I know that any scheme of this sort would require very delicate handling, and we must be prepared for many disappointments at the outset; but I believe that one based on the broad lines indicated would, in the end, fully justify the labour involved in its development.

¹ As among others, the places of assembly of Militia and Volunteer units.

² Among other things, armlets with distinguishing numbers for the civilian drivers and foremen or "conductors." This may appear, and in truth is, a small matter; but it is only by paying particular attention to seemingly trivial points that we can gradually build up a system of 2nd Line transport.

Let us, at any rate, try it in default of a better. Let us try it on manœuvres by employing the same firms as far as possible every year, so that in time we shall have our 2nd Line transport supplied by men conversant with Army requirements, and with a practical knowledge of transport work in the field. We may expect in future to have annual manœuvres in all our military commands, and therefore, the above experience should not be confined to a few firms only, but should, in a few years, be shared by all who employ any considerable numbers of horses and vehicles.

Possibly my suggestions for the development of 2nd Line transport will be considered unworkable—good in theory, perhaps, but not possible in practice. It may be so; but I should like to see them given a fair trial before being condemned as impracticable.

Of one thing I am at least certain: that any scheme honestly worked out is preferable to our present condition of absolute unreadiness.

iv.—RESERVES OF HORSES.

I feel that no scheme of land transport organisation can be considered complete which does not touch on the question of a reserve of horses for war. It should be noted, however, that any scheme in this connection cannot well be separated from the larger question of a horse reserve for the Army generally; and therefore my remarks on this subject will be brief, lest I wander from the prescribed limits of the present essay.

Let me first note that the land transport of the British Army finds employment for many kinds of animals besides horses; we use elephants, camels, mules, and oxen, collectively or separately, according to the nature and locality of the campaign. Elephants belong primarily to India, camels to Egypt, oxen to South Africa, while mules may, perhaps, be described as universal. But the horse must ever be the most important of transport animals—for home defence practically the only one—and, therefore, we ought to be able to add largely to the available numbers at short notice, without incurring the enormous expense which will inevitably result if we look to obtain them all by purchase in the open market.

From the transport point of view this question of a horse reserve is comparatively a simple one. A cavalry troop-horse wants careful training before it is fit to take its place in the ranks, and so, to a lesser extent, perhaps, does an artillery horse. But for the transport, the normal pace of which is the walk, any horse accustomed to draught work (provided it is of the right stamp and in good condition) is fit for the work required of it. I am personally of opinion that our present transport horses are, as a rule, too light: we do not want the heaviest stamp of cart horse, but I certainly think we incline rather towards the opposite extreme.

There have been many suggestions made lately as to the best way of providing horses for the Army, and especially for obtaining the additional numbers required for war. The best plan is, I think, for the War Department to buy horses young, say as three-year-olds, keep them for a year, and then pass them into the ranks as required. The South African war showed clearly enough that our remount depôts, as at present constituted, are not capable of rapid expansion; and this, I think, is partly because they are too few in number; and partly also because we maintain them only at home. We ought to extend the

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system to our principal possessions abroad—to Canada, South Africa, and Australia. We should thus not only increase the available numbers, but, in addition, we should obtain reserves of horses acclimatised to the diverse conditions which exist throughout the Empire.

I have already discussed the question of horses for home defence in "2nd Line transport," and, consequently, little remains to be said. It should be noted that from the police lists large deductions will have to be made for unsuitable animals; and here is where a great deal of tact will be required on the part of the officers concerned. The difficulties of keeping up-to-date and reliable lists of horses suitable for Army transport work, though great, are not insurmountable; and such lists should undoubtedly be carefully kept at all our larger military centres. Our real reserves are scattered broadcast throughout the kingdom: a little organisation now will perhaps mean the difference between victory and defeat later on. At present we are only prepared to deal with the *purchase* of the additional horses for war. This may be a good system for the Army generally, but will only be necessary as a supplementary measure for our land transport for home defence if our 2nd Line transport be organised in peace in the manner suggested. For an over-sea expedition, recourse will still have to be made to purchase; but by establishing dépôts abroad, and increasing those at home, the numbers so required can be considerably reduced. In the end we shall thus save money and, at the same time, be better prepared for war.

IV.—DIFFERENT KINDS OF LAND TRANSPORT.

At the present time the expression "The British Army" implies the Army raised in the United Kingdom. I would that it were otherwise. In "The British Army" I should like to include the men of all races, trained to fight for the Flag throughout our vast Empire; although it must be allowed that if this were the case, the subject of land transport would be beyond the scope of a single essay. But the limits imposed here exclude the British Army in India and the Colonies—so, at least, I understand, by the title of this essay.

It will be allowable, I think, to name the various methods of land transport with which our officers have to deal from time to time; because if we realise for a moment how completely the conditions of land transport differ in various parts of the Empire, we shall the better be enabled to understand the comparatively humble part that the transport companies of the Army Service Corps may play in some future campaign abroad. At home, for home defence, the position is far otherwise: we are practically limited to railways, horse transport, canals, traction engines, and motors. On foreign service we employ various kinds of wheel or pack transport, or carriers; but I do not think that the consideration of these last properly falls within the scope of this essay, even though for an over-sea expedition we may, and probably shall, depend on some or all of them to supplement (if not to supersede) our contingents from home. It is, however, just those contingents with which I am now principally concerned, and they will be *mainly* composed of horses and wagons. The organisation of this branch of our land transport has already been considered, but there are one or two minor points which demand further elucidation.

One of these concerns our "general-service" transport wagon. Broadly speaking, there are two types; the "lock under" (Mark IV.),

and the "quarter lock" (Mark VII.). The former is easier to drive, that is to say, it can be turned better on level ground, but it is liable to upset over rough country, owing to the relatively small size of the front wheels. The fault of both types, from a transport point of view, is that they are too narrow, and do not hold enough, consequently, there is a waste of horse power. I believe that the track of all vehicles throughout the Service is purposely limited; and that, were it increased, the result would be to render useless all our bridging material, both as regards width of roadway and weight-bearing capacity. If this is indeed so, it is obviously more than a mere question of transport; but bearing in mind the enormous importance of supply in the field, it may fairly be asked if the time has not arrived for a reconsideration of the whole subject.

Another point is the necessity for providing our cavalry and mounted infantry with a more mobile (*i.e.*, a lighter) type of transport wagon. This undoubtedly means increased expense, because a light wagon will not bear the strain of active service as well as a heavier one; but expense should not be allowed to stand in the way of increased efficiency. So, too, we ought to introduce a lighter type of ambulance for use with the field hospitals.

We are now at liberty to turn our attention to the various kinds of supplementary land transport, which are surely destined to play an important part in the defence of these islands.

a. Railways.—Railways and tramways can be taken under military control by an Order in Council declaring that an emergency has arisen. I doubt if tramways would ever be of much use, at any rate, they may safely be left alone until the emergency comes. But with railways it is quite another matter. In the event of invasion they would be of the utmost importance—to the enemy as well as to ourselves—and I am of opinion, therefore, that a certain number of officers should be specially trained in their practical working: I do not mean in the mechanical driving of an engine (though I should like to see more "Railway Volunteers"—in fact, I consider that every railway company should have its Volunteer corps); but the knowledge essential for directing and regulating traffic might be advantageously acquired. True, we can rely on the officials of the various railway companies to give every assistance, but I believe that a more military control (always supposing it were exercised by officers with the requisite experience), would be highly desirable, if not actually essential. Why should not the Army Railway Council have branch establishments in every military district throughout the kingdom, composed of the prominent railway officials, and a limited number of officers, and to which other officers could be attached for instruction? A great many little points would surely arise deserving of attention, and nothing but good could result from the establishment of more intimate relations between the Army and the railway companies. In time, perhaps, a standard gauge might be adopted throughout the United Kingdom—a matter from a military point of view of very great importance.

b. Canals.—Canals are not suitable for military transport in war. They are vulnerable, easily blocked, very slow, and of comparatively small carrying capacity. Still, in parts of the country remote from the enemy they could, doubtless, be utilised in filling up supply depôts. My proposed "Civilian Transport Council" should, therefore, ascertain the average rate per mile on the main canals, the

number of barges (steam and otherwise) and horses ordinarily available, and the carrying capacity of the former. I doubt if we can go beyond this with any advantage.

c. Traction Engines.—Traction engines can only be used on good roads, and are essentially 2nd Line transport: they should never be brought within range of the enemy's fire. They save horseflesh, but against this must be set the wear and tear on the roads. The Royal Engineers, with their usual adaptability, employ them, but they have hitherto formed no part of the Army Service Corps establishment. This is, I think, a mistake: every possible means of land transport should be familiar to the train of the Army. Too close an adherence to the most important branch—horses and wagons—leads to the neglect of others, which are yet of sufficient importance to justify a more liberal treatment. I do not suggest that the Army Service Corps should adopt, to any great extent, transport suitable only in the 2nd Line; but, as the efficiency of the 2nd Line will be of the utmost importance to the 1st Line in the field, there is no doubt that a knowledge of the chief methods employed by the former will be of great value to the latter, and should therefore be studied in peace.

d. Motors.—Of all kinds of auxiliary transport the "motor" is likely to be the most important in the near future. It possesses many substantial advantages, of which speed and saving of manual labour are the chief; and its principal disadvantage, a liability to break down, especially over uneven ground, will certainly diminish as improvements are introduced.

A series of exhaustive experiments was carried out at Aldershot in December, 1901, when several different types of motors ("self-propelled lorries") were tested. The most important points of the subsequent report may be epitomised as follows:—

- a.* Steam lorries are capable of doing excellent service in countries where fuel and water are plentiful. Those burning heavy oil use little fuel, and are practically independent of water.
- b.* A single lorry, carrying 5 tons, is more than the equal of 3 general-service wagons, which require 12 draught, with riding and spare horses. The speed of the former over hilly average English roads is about 6 miles an hour, against the 3 miles an hour of the latter.
- c.* Lorries should be used singly: a "trailer" is detrimental to rapid and handy work.
- d.* A powerful tractor, drawing a train of wagons behind it, is recommended for work in the 2nd Line. This bears out what I have said under "Traction Engines."

In countries where roads are numerous, part at least of the light transport already suggested for cavalry and mounted infantry should be composed of motors.

At present the motor may be said to be in its infancy, and, therefore, undue haste in adopting it for Army transport purposes is to be deprecated; hence its non-introduction until recently for general use. The formation of "mechanical transport companies" has, however, now been approved, and their work on manœuvres will be watched with interest. Sanction has also been given for the establishment of a Volunteer Motor Corps.

I believe that motors will in the future, to a great and increasing extent, take the place now held by horsed wagons. The transformation, no doubt, will be gradual: but our land transport must not be allowed to fall behind in the race for supremacy. The army that possesses better land transport than the enemy will, on war being declared, start with the campaign half won.

V.—MISCELLANEOUS.

a. Staff Duties.—The organisation of our land transport must be considered not only with reference to its own inner working, but also in relation to the rest of the Army.

Until quite recently, a staff officer of the Army Service Corps, for what were known as B duties—duties which included transport, all we have to consider here—was the intermediary between the general officer commanding and the officer commanding Army Service Corps. Now this has been changed; and at the head quarters of each of the six army corps there will be an Army Service Corps officer (colonel on the staff) as director of transport, who will be charged with the administration of all transport services in the army corps area, and will be the adviser of the general officer commanding on transport generally. This is as it should be; but I am inclined to doubt if, in the smaller commands, the new procedure will answer so well. Take for instance a brigade: the transport will be administered by the officer commanding Army Service Corps, who, though only a regimental commanding officer, will thus be responsible for duties hitherto performed by a staff officer. He will, moreover, be the adviser of the general officer commanding the brigade, and the medium of communication on all local transport matters. To enable him to carry out these duties in a satisfactory manner, he should be given the status of a staff officer; that is to say, he should be a lieutenant-colonel (or major) on the staff, or staff captain, as the case may be: otherwise I foresee difficulties. With this addition, the new regulations will certainly be an improvement on the old system of having two officers (the B staff officer and the officer commanding Army Service Corps), whose duties not infrequently overlapped.

b. Regimental and Medical Transport.—Regimental transport should be limited to what is considered necessary for the conveyance of ammunition and water. In the commonly accepted sense of the term, *i.e.*, horses and general-service wagons, regimental transport was abolished in South Africa as useless. We might have done away with it sooner, as the result of experience at peace manœuvres: for it stands to reason that small bodies of transport, acting independently of one another, must be wasteful; and, if united and worked together, they become merely an Army Service Corps Company, indifferently trained.

As a school to enable previously trained men to keep up their knowledge of transport work, regimental transport may, perhaps, be defended; but nothing will, in my opinion, justify its retention in war. I suggest, for peace, a modification of the Indian system, that is to say, a wagon and horses might be *lent* by the Army Service Corps to every infantry battalion at home. These would be inspected periodically, and changed for others at the discretion of the officer commanding Army Service Corps. On the departure of the battalion from the district, or for manœuvres, the horses and equipment would

be withdrawn. At stations where there are no transport companies, a small saving of expense would result from the maintenance of regimental transport on these lines.

I should like to see the Royal Army Medical Corps independent of the Army Service Corps as regards transport, just as the Royal Artillery and Royal Engineers are independent, *i.e.*, for everything except food and forage. Ambulances are entirely distinct from supply wagons; and it would be an advantage to the train, as well as to the medical department, if the transport of the two services were kept separate.

The Boer war did not decide one important point of international law, *i.e.*, how far the Geneva cross will protect drivers of the Army Service Corps employed with ambulances. A driver of the Army Service Corps is a combatant soldier, who may at any time have to fight in defence, let us say, of a convoy. Next day, owing, perhaps, to a wound or other circumstance, he becomes a harmless non-combatant in charge of an ambulance. Or he may even be employed with a field battery, as was the case with a number of Army Service Corps' drivers in South Africa. His position thus becomes equivocal, to say the least of it: and, in any case, it is surely advisable to separate entirely combatant and non-combatant duties.

c. *Local Establishments Abroad.*—With the exception of South Africa—and only in that case since the war—all our Regular transport companies are stationed at home. This is a good arrangement, as it renders the greatest possible number available both for an over-sea expedition and for home defence. Abroad, India has her own transport system, Australia has a small Army Service Corps, and Canada is about to follow suit. At stations of Imperial troops, local transport establishments are maintained under Regular transport (*i.e.*, Army Service Corps) officers. Gibraltar is a good example of this system, which I have already recommended should be gradually adopted in South Africa, so that the whole of the Regular transport companies may ultimately be released from service there. This change can only be carried out by degrees: indeed, in parts of the country it may be necessary to keep companies there for many years to come. Should this prove to be the case, I suggest that certain companies be placed on the "South African Establishment" and kept there permanently for the present, so as not to interfere with the proposed two years' enlistment at home, and especially with the non-movement of companies for facilities of mobilisation. Enlistment for the South African companies should be for 3 years, as now, with slightly higher rates of pay, and corps pay to attract recruits. No alteration in the officers' foreign service roster would be necessary. Non-commissioned officers and men extending their service after 3 years should have the option of continuing to serve in South Africa, or of being placed on the home establishment. A sufficient number of the former would, no doubt, volunteer for service with the local companies, which would gradually replace those on the South African Establishment.

A start should be made at once with the formation of these local companies, especially as their organisation, rates of pay, etc., can only be determined by actual trial, and in conformity with widely varying local conditions.

d. *A Transport Manual.*—Unfortunately very few books have been written on military land transport, and a good manual is much needed at the present time. Colonel Furse's "Military Transport" is, so far

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as I am aware, the only attempt at treating the subject broadly, and much of that excellent book is now obsolete. The "Army Service Corps Drills and Exercises" contains plenty of useful information, but it is scarcely as complete a book of reference as are the Cavalry, Artillery, and Infantry Drill-books for their respective arms. The ideal transport manual which I have in my mind should deal succinctly with our system of land transport at home and abroad, in peace and war; should define clearly the difference between 1st and 2nd Line transport, and describe the duties of each, and especially the functions of the latter in the event of mobilisation for home defence. Some account of the transport systems of foreign Armies would be interesting and instructive.

A book such as this could not be completed in a hurry, nor by one writer, but its commencement should, I think, be no longer postponed. To the young transport officer, anxious to make himself acquainted with the higher duties of his profession, it would be invaluable: while his seniors, who know what an immense field military transport covers, would always find in it something new; and to one or another of its many ramifications would be able to add the results of practical experience.

VI.—CONCLUSION.

The proposed organisation of our land transport which has been advocated in the foregoing pages is, for an over-sea expedition, the holding in readiness of 48 companies¹ (that is sufficient for 3 army corps and 3 cavalry brigades²), with, say, 5 more¹ for duty on the lines of communication, which, by means of reducing the period of service to 2 years, it is considered could be easily and quickly raised to war strength. For home defence, the remainder of the Regular companies,³ with a large number of volunteer companies for the 1st Line; and an organised civilian transport for the 2nd Line. Abroad, the formation (where they do not already exist) of local transport establishments of a military or semi-military character—establishments which could readily be expanded in war, either purely for the defence of their own particular territory or as an aid to an over-sea expedition from home, operating in or from that portion of the British dominions. As regards horses: depôts at home and abroad, assisted by purchase (and hiring for the Volunteer transport companies) on mobilisation,⁴ besides a careful system of registration for the needs of the civil transport. A company territorial system which, combined with short service, should make mobilisation easy, besides rendering possible the formation of reserve companies to replace casualties, or even to take the field as substantive units for home defence.

Volunteer transport companies are absolutely necessary to enable our citizen soldiers to keep the field; while the systematic organisation

¹ These should be on the higher peace establishment.

² See p. 399.

³ These might be kept on the lower establishment.

⁴ Frequently revised lists of suitable animals (and, if possible, prices) should be kept by officers commanding companies, a "horse district" being allotted to each.

of transport for the 2nd Line I look upon as one of the very best steps we can take to secure the safety of this country.

All the foregoing points raise questions of supreme importance, and consequently I have endeavoured, as far as possible, to consider them in some detail. With the broad principles involved general agreement may be anticipated: the absolute necessity for a continuity of policy (which alone can enable us to arrive at something like a final solution of the vast problem of land transport) may be taken for granted. Such changes as I have advocated I consider necessary; and with their aid I have tried to evolve a definite scheme for the better organisation of our land transport; and I have, inviting criticism, set it forth in some detail. Since it is always easier to pull down than to construct, the critic should be prepared to substitute an alternative for everything he would alter or destroy. I believe that any scheme of land transport must be necessarily of the nature of a compromise, and I know that mine is no exception to the rule. Did space permit, I should be prepared to defend many points that will, no doubt, be roughly assailed; but, as it is, I will limit my observations to two points. Firstly, I would ask that each separate clause, before being condemned, should be considered, not singly, but with regard to the entire scheme; many points could, no doubt, be improved upon, but would they then agree with others of perhaps greater importance? Secondly, let it be remembered that it is easy to generalise. With the recital of certain broad truths it is impossible to differ: the obvious is unassailable. Directly, however, a writer leaves this safe high-road and deviates into the by-ways of detail, he at once lays himself open to attacks from all sides. Yet generalities are of little value, and even an indifferent scheme logically explained is better for practical purposes than vague definitions of policy or nebulous warnings of what should *not* be done.

There is no reason why the organisation of our land transport should not be placed on a permanent and satisfactory footing. Permanent, that is so far as general principles are concerned, because like strategy, of which indeed they may be said to form part, these principles do not change. Details, on the contrary, must ever vary; the next great change, for example, will, I believe, hinge on the gradual development of mechanical transport. For this and other changes equally marked which the future may hold in store, our organisation should find us fully prepared. We are advancing on the right lines; but has not the time now arrived when we can safely advance a little more rapidly? Not by adding largely to our regular establishment in peace, but by the building up of as large a Reserve as possible without sacrificing efficiency, bearing in mind that expenditure in that direction should be looked upon as a national insurance; and especially by developing to the utmost the latent resources of the country for transport of the 2nd Line.

Conscription in some form or another, under this or that name, may or may not be forced upon us in the future; but come it must, sooner or later, unless our civilian population meet it, so to speak, half way. The organisation of 2nd Line transport is at once the least irksome, and (until our fighting forces are largely increased) the most valuable form in which Englishmen can learn and practise those duties which every man, of whatever degree, owes to the country of his birth.

TABLE A.
A TRANSPORT COMPANY AT PEACE STRENGTH

Officers.		Warrant Officer.	Non-commissioned Officers.					Wheeler.	
Cap- tain.	Sub- altern.		Co.-Sgt.- Major.	Co.-Qr.- Master- Sgt.	Sgts.	Corpls.	Second and Lance- Corpls.	Staff- Sgt.	Corpl.
1	1	1	1	1	3	3	3	1	—

Divided into⁵:—

a. Company Staff—

1 Captain

1 Company Sergeant-Major

1 Company Quartermaster-Sergeant

1 Trumpeter

Total 4

Horses:—Riding, officers 3 (including 1 Warrant Officer's)

others .. { 3 (Company Staff)
2 (Sergeants)

draught 26

¹ There are either 2 staff-sergeants and 1 corporal, or 1 staff-sergeant and 2 corporals.

² "Waggon-man."

TABLE A---*contd.*

(ON THE HIGHER ESTABLISHMENT).

Artificers. ¹							Trum- peter.	Driv- ers.	Tl. all ranks.
Collar-makers.			Farriers.						
Driver.	Staff- Sgt.	Corpl.	Driver.	Staff- Sgt.	Corpl.	Shoe and Carriage- smith.			
1 ²	—	1	1 ³	1	—	1	1	41 ⁴	62

b. Two Sections, each Section consisting of—

1 Subaltern or Warrant officer

5 (or 4) Non-commissioned officers

4 (or 2) Artificers

21 (or 20) Drivers

} Ranks at discretion of
the officer command-
ing the company.

Total 31 or 27.

Vehicles—

General Service wagons. 7

Ambulance 1

² "Learner."

⁴ The establishment is really 43, and includes 2 who are employed as artificers.

⁵ This is my suggestion, not the present arrangement.

TABLE B.

A TRANSPORT COMPANY

Officers.		Warrant Officers.	Non-commissioned Officers.						
Major or Captain.	Sub-alterns.		Co.-Sgt.-Major.	Co.-Qr.-Master-Sgt.	Sgts.	Corpls.	Second and Lance-Corpls.	Wheelers.	
								Staff-Sgts.	Corpls
1	4	4	1	1	10	8	10	2	2

Divided into:—

a. Company Staff—

1 Major or Captain

1 Company Sergeant-Major

1 Company Quartermaster-Sergeant

1 Trumpeter

Total 4

Horses:—Riding, officers 9 (including 4 Warrant Officers')

others.. { 3 (Company Staff)
10 (Sergeants)
6 (Staff Sergeant Artificers)

draught 230

NOTE.—Spare non-commissioned officers' men and animals will be left at base to replace casualties. Spare vehicles will also be left at base for use as required. Thus (for example) a company furnishing the transport for 4 bearer companies requires 40 ambulances, and these will be found at base left behind by other companies requiring none.

TABLE B—*contd.*

AT WAR STRENGTH.

Artificers.							Trum- peter.	Dri- vers.	Tl. all ranks.
Collar-makers.			Farriers.						
Drivers.	Staff- Sgts.	Corpls.	Drivers.	Staff- Sgts.	Corpls.	Shoe and Carriage- smiths.			
5	2	2	6	2	2	13	1	160	236

b Four sections, each section consisting of—

1 Subaltern.

1 Warrant officer.

7 Non-commissioned officers

9 Artificers

Ranks at discretion of the officer commanding the company, on mobilisation; and afterwards according to the requirements of the different supply columns among which the company is divided.

40 Drivers.

Total 58

Vehicles.—General service wagons	...	...	35
Forage carts	...	...	2
Water carts	...	...	8
Ambulances	...	...	10

FINANCIAL LESSONS FROM THE LATE WAR.

By Lieut.-Colonel SETON CHURCHILL

(late Army Pay Department).

(Continued from March JOURNAL, page 288.)

PART II.

PAYMENT OF DEPOTS AND REGIMENTS.

In a lecture I had the honour to deliver at the Royal United Service Institution in 1897, some three years before the outbreak of this war, I ventured to point out that though our financial system was very *expensive* it was not very *expansive*, and that it was unable properly to cope with a larger force than about 100,000 men engaged on active service, and that we should get into great trouble if ever we had to engage in a campaign with upwards of 300,000 men. Of course, the non-progressive element ridiculed the idea of the possibility of our ever having to send such an army into the field. Within three years we had on our hands in South Africa a campaign to which we had to send, including men invalided home, and the substitutes who came to take their places, over 400,000 men, and if we include the embodied Militia and the Royal Regiments of Reserves called out in England, our united army amounted to a great many more than 500,000. So much for those who have no imagination, and are unable to estimate the possibilities of the future. The lesson for us to learn from this sudden expansion is that we must also have an expansive system of paying men, for not only have we to pay bachelors, husbands, and fathers, but directly a war breaks out we have also immediately to provide for the wants of an enormous mass of wives and children, each of whom receives what is known as separation allowance, in addition to permanent allotments and family remittances. I submit now, as I did three years ago, that our system has exhibited a most lamentable want of expansiveness, and yet this could so easily be remedied without adding on much to its expensiveness.

In the lecture to which I have alluded, I pointed out that we could not send to the seat of war more than about 30 per cent. of our financial officers and clerks, and subsequent events have justified that statement; whereas I maintained that it would be very discreditable if we could not send at once 50 per cent of the whole, and go on gradually increasing to a much higher percentage. The Army Service Corps and the Army Ordnance Department both managed to send upwards of 80 per cent. of their strength to South Africa, but the Army Pay Department never exceeded about 30 per cent. This was the fault of a most defective system; by which we allow our officers and clerks to be tied up in depôts, often doing work which is not in any sense financial.

As the figures have changed very little since those days, I will quote them as they then stood. Including the War Office civilians and their clerks, the Army Pay Department and the Army Pay Corps, there

were 1,176 persons engaged in military finance; but of this number only some 208 officers of the Army Pay Department and 650 clerks of the Army Pay Corps were available for active service, and of this number so many were tied up in depôts that, as a matter of fact, at a great push only some 60 officers and 180 clerks could proceed to the seat of war. Fortunately, the climate was a healthy one, and the only casualties that took place were from officers and clerks breaking down from over-work. If we had a bad climate to contend with the results would have been most disastrous.

It also so happened that though only 60 officers and 180 clerks were sent to the seat of war, yet there were available an enormous number of civilian clerks from Johannesburg who were only too glad to get some employment. This was a piece of good fortune which really saved the situation. Many of these clerks were good men from banks, and thoroughly well-trained accountants. Of course they were very costly, many getting as much as ten shillings per diem. In no future war could we ever count on having an enormous number of English refugees on the spot to help. In spite of their ability, however, we found how utterly unable they were, from a want of knowledge of our regulations, to do work that our well-trained clerks on half their salary could do. They saved the situation for that occasion, but, for the credit of our Service, it is to be hoped that we shall never again be put in such a position.

It may be asked why, if we have 208 officers and 650 military clerks, more could not have been sent to the seat of war.

The following analysis, showing how these 208 officers were scattered in as many as 103 stations, will explain matters:—

OFFICERS.				Available for Active Service.			
63	Paymasters in office, with only 1 officer	...	...	...	...	Nil.	
34	" " " 2 officers	...	...	...	...	17	
24	" " " 3 "	...	...	...	...	12	
28	" " " 4 "	...	...	...	...	14	
10	" " " 5 "	...	...	...	...	5	
12	" " " 6 "	...	...	...	...	6	
7	" " " 7 "	...	...	...	...	3	
16	" " " 8 "	...	...	...	...	8	
10	" " " 10 "	...	...	...	...	5	
4	" unattached.					4	
208	Total in A.P.D. available for active service					74	

As it is obvious that in a single-handed office no one could be spared for the seat of war, and in an office where there are only two, only one could be spared, and so on, it is a mere matter of calculation to see that 208 officers, as at present arranged, could at a push, if none were sick, only supply about 70 officers, which would be less than 30 per cent. of the 234 officers and civilians receiving the pay of an officer. This I submit is totally inadequate for the possible needs of the British Army, and no system can be considered satisfactory that could not, at a great push, send as many as 75 per cent., or 150 officers, with a corresponding proportion of clerks.

Instead of scattering paymasters about during peace-time at different stations, whence they cannot be removed in the event of war, as there would be no one to take their places, let all the paymasters be

concentrated at the headquarters of each district: that is at about 15 large centres at home, and at 12 small ones abroad, so that at once 30, 50, or 75 per cent. could be sent off and yet let the work go on without a break, those left behind being supplemented by a few Army Pay Department officers from the Reserve list. Financial is unlike medical work, as in the latter there must be personal attendance; but in financial work everything can be done by means of the penny post.

I then quoted as an example a large double district in which I was quartered for some time, and in which the great bulk of the work was done by post. There were about 3,000 men of the Army Reserve and pensioners to pay quarterly, so that about 24,000 letters, or documents, left the office annually, of which about one-half contained money. In addition there were about 1,200 recruits enlisted annually, and eight *dépôt* companies to be paid. Besides this we had a battalion of Infantry, 2 regiments of Yeomanry, 4 battalions of Militia, and 5 battalions of Volunteers. By far the greater amount of work is already done by post, and what remains is mere child's play, and could just as easily be done in the same way. It does not matter to the recipients of letters whether they are posted at any particular station, or at the headquarters of the district. If this could be done in a double regimental district, which is one of the largest in England, it could, of course, be done even more easily at the many smaller regimental districts, which in the aggregate absorb so many officers and clerks. A few trifling items might, as in battalions of Infantry and regiments of Cavalry, be paid by the adjutant of the *dépôt*, making up his pay to 5s., as has already been done in regiments. In addition to this he should have, appointed for 5 years, a well-trained quartermaster-sergeant of the Army Pay Corps, who would know all the regulations on finance bearing on each subject.

At present a great deal of the time of a paymaster at a *dépôt* is occupied with work which is not of a financial nature. Mobilisation documents, attestations, and carrying out discharges, refer more to the orderly room than to the pay office; and if the present orderly room clerk is not able to deal with them—and I do not think that he can do so properly—his staff should be increased; but it is obviously wrong that duties connected with mobilisation, or with returns of men of the Army Reserve, or their attestations and their discharges, should be made a part of the duties of financial officers. In a regiment duties of this nature have always been a part of the duty of the adjutant, and it is not easy to see why the same principle should not prevail at a *dépôt*.

On the principle of *ex uno disce omnes*, I will now proceed to show how this system would work in the North-Western District, which is one of the largest and most difficult in England. There are in that District, which has its headquarters at Chester, 17 officers of the Army Pay Department. Ten of these are at stations single-handed, and not one of them could be removed to the seat of war, as it would take them all they know to cope with their work, if the Army Reserve, pensioners under fifty years of age, Militia, Volunteers, and Yeomanry, were called out. There are two *dépôts* with two officers of the Army Pay Department, each of whom could spare one, and there are at the headquarters of the district three officers. Only one of them could be spared, so that out of the 17, only 3 in all could be sent to the seat of war, which is not 18 per cent.; whereas I submit that at least 75 per cent. ought to be available at a push.

If all the financial duties of the North-Western District were concentrated at Chester, they might be divided into the following five subdivisions, though I think that this is one of the districts in which there might be a considerable reduction in the number of financial officers:—

- A. 1 Colonel. To perform the entire audit of the district—the
1 Major. work now done at the War Office.
1 Captain.
- B. 1 Lieut.-Colonel. To perform the same duties now done by the
1 Major. District Pay Office.
1 Captain.
- C. 1 Lieut.-Colonel. To pay all the regiments and depôts in the
1 Major. General's Command.
2 Captains.
- D. 1 Lieut.-Colonel. To pay all the men belonging to the Army
1 Major. Reserve, about 12,000.
2 Captains.
- E. 1 Lieut.-Colonel. To pay all the pensioners belonging to the
1 Major. District—about 12,000.
1 Captain.

In the pressure of a great war all the work in the district could, with well-trained clerks, be done by very few officers, especially if officers from the Reserve were utilised, so that the great bulk of the 17 would be available for the seat of war, as compared with the 3 who, under the existing system, would be sent, and yet the work would go on nearly as well. But this could not be done without a capable staff of well-trained clerks, for which I have arranged.

Let us now compare the North-West District with Aldershot, a district in which the plan I advocate is already in existence. In the North-West District there are 17 officers of the Army Pay Department, but only about 18 per cent., or 3 in all, could be sent to the seat of war. But at Aldershot there are only 10 financial officers, and yet they could send more to a campaign. The difference between the two districts is that at Aldershot all the Army Pay Department officers are concentrated under one chief paymaster, whereas in the North-West District they are all scattered about. Why should not the Aldershot system be applied to the whole army? It does not meet the case to say that at Aldershot all the troops are concentrated, and that in this District they are scattered.

If all paymasters were concentrated into 15 large centres at home, and 12 smaller ones abroad, and the system in each was assimilated to that of the War Office, there would be absolutely no reason why officers and clerks should not be interchangeable between the War Office and the districts, only the picked ones of ability going to the former.

We should thus have a system better adapted for peace than the existing method and more capable of expansion in the event of a great war. When a war broke out each centre could supply 30, 50, or even 75 per cent. of the officers and clerks, and yet the work would go on smoothly. If it appeared that a chance existed of the war lasting for a prolonged period, as in the Crimean war of 1853, and in South Africa

in 1900, each centre would become a school for training fresh officers and clerks, so as to fill vacancies as they occurred from time to time. In this way we may some day hope to see an economical military financial system, which will be adapted for war on the largest possible scale in which the British Army could be engaged, and yet not costing much more than the defective one which now exists—which could not possibly stand the strain of a prolonged campaign in a bad climate, which is ill-adapted for peace, and which, though costly, does not attract a sufficiently large percentage of men of ability to enter the executive, or the administrative branches. I have great faith in the British officer of the present day, and I venture to think that there is nothing he cannot do, if only he is given the opportunity of training himself for the work and suitable attractions are held out to him.

There is also another good reason why officers and clerks should be concentrated at the headquarters of each district. In a campaign it is absolutely necessary that a large pay office should be formed at the base, so it is most desirable to accustom officers and clerks to work in peace time on the conditions that must prevail during a war. Men who are only accustomed to work in small single offices do not find it so easy at once to adapt themselves to the conditions necessary to a well constituted large office. Large offices also have the advantage of enabling the head of it to compare the relative merits of officers and clerks, and to fix in his own mind a standard of merit for each, which is impossible in small scattered offices.

PAYMENT OF REGIMENTS.

Among the many lessons that this war has taught us is that our existing system of paying regiments is very defective. When I left my regiment and joined the Army Pay Department, each battalion had a paymaster and a pay-sergeant. This system was abolished in 1899, as it was found that there was not sufficient work for a paymaster, and—as there was a large number of them, and their pay had to be pretty high (so as to secure honest men)—their cost was a very serious item in Army expenditure.

In India it was found that there was no necessity for the existence of a costly paymaster, and in the German Army the so-called paymaster was not an officer at all, but only a superior kind of non-commissioned officer, who kept the accounts, with power to issue small sums not exceeding £15.

Many officers of the Army Pay Department pointed out the costliness of the system, and at last, after many years, regimental paymasters became *non est*. But, as is often the case, the examples afforded by India and Germany were only partially followed; and it is to the extent of this omission that our defects have arisen.

The duties of the paymasters were transferred to the adjutant, and his pay was increased from 3s. 6d. to 5s., which was a great god-send to many men, as up to that time the extra expenses connected with horse, saddlery, etc., were not met by the 3s. 6d. *per diem*. But, instead of giving the adjutant a well-trained clerk to assist him in his financial duties, as is the case both in Germany and in India, we merely added on an extra N.C.O. to the orderly-room—a blind leader of the blind, with no one to train him. This fatal blunder has been a fruitful source of trouble ever since, and to it is due most of the

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mistakes that have since occurred which have so much discredited the system.

The system is now so discredited that many with short memories have seriously advocated taking a retrograde step, and going back to the old costly plan of reintroducing regimental paymasters, and thus wasting more money on non-combatants which could be better spent in paying fighting men. The system, it is true, has frightful faults, but to put the clock back is no panacea to the existing evil, which can easily be met otherwise, and would never have been introduced had our financial system been in the hands of practical military men, instead of War Office civilians who had no experience of regimental life.

Instead of giving the adjutant an additional clerk in the orderly-room—who, as I have said, is but a blind leader of the blind—we might appoint, for five years, to each battalion a well-trained quartermaster-sergeant of the proposed Financial Staff Corps, who would be thoroughly up in all regulations, and who could point the adjutant to the latest financial orders on any subject. Armourer-sergeants and bandmasters are already trained outside the regiment, and then appointed to a regiment for duty, and this system works well. Being senior to all the pay-sergeants of companies, this quartermaster-sergeant could train them and see that all their pay-lists were in due form before submitting them to the chief paymaster for audit. No money would pass through his hands, so he would not be exposed to any temptation, and the adjutant would be saved all the worry and trouble that is now associated in dealing with financial matters.

When we come to consider the payment of companies, we find that our existing system is most defective; but this is not on account of any recent changes in the *personnel* that have taken place, but rather because no change has been introduced to enable captains to keep pace with all the returns, documents, pay-lists, clothing vouchers, ordnance vouchers, etc., that have multiplied to such an extent in recent years.

In olden days of long service, when there were very few changes, a colour-sergeant was quite able to do the pay duties in addition to his own work; but one of the results of short service is that frequent changes are taking place in a company, all of which require correspondence, transfer documents, etc.

It is obvious that when a company goes on active service, and a large number of young soldiers are taken out for transfer to the *dépôt* or to the home battalion, and a larger number of men from the Army Reserve have to take their places and bring the company up to the increased war establishment, that the poor "maid of all work," the colour-sergeant, has a bad time of it. In addition to office work, a colour-sergeant has to look after drill, musketry, discipline, routine, orders, do his guards, etc. It is more than any one man can do with justice to himself and to his captain; and on the eve of a war, and during a long campaign, the strain is too great.

The best remedy is to divide up the duties of this unfortunate "maid of all work," and let a pay-sergeant be appointed to each company, as is the case in the cavalry and artillery. In the same way that each adjutant has a sergeant-major to deal with all out-of-door duties, and an orderly-room clerk to deal with indoor work, so let the captain have a colour-sergeant to deal with drill, discipline, and musketry, and a pay-sergeant to deal with pay, clothing, equipment,

and rations. Each might be paid the 4s. *per diem* which a colour-sergeant now gets.

The only extra cost would be the difference between the pay of a sergeant and that of a colour-sergeant—viz., 1s. 6d.—as the pay-sergeant would, like the colour-sergeant, continue to do all his guards, parades, duties, etc.

As the clerical duties have recently increased so much, it is only fair that the public should bear a slight increase to the cost of maintaining a company, so as to make that unit more perfect and complete.

There has been a remedy suggested of which I cannot approve, but which I would gladly see introduced in preference to the existing system. This remedy has been proposed by some for whose judgment I have the greatest respect, and it is with the greatest diffidence that I venture to differ from it. It is that the payment of companies shall be taken out of the hands of the captains, and put into those of the chief paymaster of each district, who, for this purpose shall have two clerks from each regiment in his office, who shall keep the accounts of each man, merely submitting once a week to each captain a roll showing the sums due to each man, accompanied by a cheque for the whole.

This suggestion is not a new one, and is indeed the system that exists in the Royal Navy, except that the paymaster of the ship not only keeps the accounts, but issues the money. There are, however, very serious objections to applying the Naval system to the Army, as the conditions are so different. Each ship's crew is a complete unit, and the paymaster is ever at hand to settle with the men. But in the Army companies are often detached singly, and are cut off from the headquarters for months, and even years, sometimes with a very irregular line of communication. Captains would then suddenly be called upon to perform pay duties, but they would have been deprived of the means of learning these duties during peace time and at home.

In addition to this, the authorities do not want to deprive captains of any opportunity of learning their men's characters, and nothing teaches a man's character so well as dealing with money. With new men ever joining a company, it is hard enough for a captain to know his men as it is, but to transfer pay duties away from the captain would make it even harder to do so.

In time of war this plan would work no better than in peace time. Supposing a regiment to have been inside Ladysmith, with its two pay-clerks at Pietermaritzburg, in the chief paymaster's office, and the Boer Army between the two. The captains had plenty of money, and the men wanted money during the siege, but for six months there could be no proper accounts kept. A regiment at the Andaman Isles or at a place like Mauritius, with a French fleet cutting them off from communication with the mainland, would be in a similar position.

It is a pity to tamper with one of the fundamental principles of our Army—which is also common to all the civilised armies of the Continent. Recognising how easy it is for a company to be cut off, the principle has been universally adopted that a captain must be in *loco parentis* to his men, and must be responsible for pay, rations, clothing, ammunition, etc. The men learn to look to him for everything, and he gets to know the men, and they in their turn get to know him. Difficulties have occurred, but they can be surmounted in a

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better way than to upset all the valuable experiences, acquired by centuries, in all civilised armies. At all events, before we ride roughshod over the traditions of the past, let us make quite sure that we have exhausted every means of meeting the difficulty—which I, for one, venture to think that we have not yet done. The adjutant and the captains are both called upon to perform more duties than they used to do. Let us, then, advocate for them a logical increase to their staff by adding on a well-trained quartermaster-sergeant to the staff of the former, and a pay-sergeant to the staff of the latter, and I venture to submit that the difficulty will be met.

There is, however, another strong argument which tells very much against this innovation, which is that no good regimental clerks will accept the post, as it entails their being permanently away from their regiment. If they are good men they will want promotion in their regiment; but "out of sight out of mind," and if they are permanently away they will be often overlooked when something good is going. But even in a well-organised regiment, in which absent men, if good, are not overlooked, it will be like ploughing the sand for financial officers to keep on training good men, and then to have them taken away to fill another position.

Then, again, if these clerks are to be transferred from the District pay-office of one G.O.C. to the corresponding office in another District, they will soon cease to know personally anything about their regiments, and to all intents and purposes they will become regular Army Pay Corps clerks, with the additional disadvantage of being liable to be taken away from their legitimate duties just when they have begun to learn their work. They would be a sort of "no man's child," as the chief paymasters would not take much interest in them, and the colonel of their own regiment would not know them. The cost of these two untrained clerks, who would be on such an unsatisfactory basis, would be much more costly than that of appointing for five years to each regiment a proper, well-trained quartermaster-sergeant, who would be always on the spot to lend a hand in all financial questions.

I am, therefore, strongly of opinion that there is no need to upset the existing system of paying regiments and companies, but simply to adapt it to the changing circumstances of the age. What with increased Parliamentary enquiries, and the introduction of the short service system and of the new clothing regulations, the fact ought to be recognised that the old conditions have ceased to exist. What was possible in olden days is no longer possible now, and, therefore, captains ought to be allowed other help than they can get from their own overworked colour-sergeant, and that the pay-sergeant of the future should have at hand one thoroughly able, well-trained quartermaster-sergeant, attached to their regiment, to whom they can look for instruction and counsel in any difficulties that may arise.

PART III.

PAYMENT OF INDIVIDUAL SOLDIERS AND OFFICERS.

This war has exposed a very serious defect in our financial system, and although this is not the first campaign in which this shortcoming has become apparent—for the same evil was felt as far back as 1885, in Egypt—yet the increased numbers engaged in this South African war, and the enormous extent of the area over which our troops have been

scattered, as well as the fact that in this war we employed thousands of Colonials who are not accustomed to our Imperial system, and are therefore very critical of it, has considerably emphasised the evil. There can be no question but that in this campaign a great deal of unnecessary trouble and inconvenience has been inflicted on the men, who have left their units without a transfer statement of accounts (A.F.O. 1812).

Our financial system has been held up to ridicule in the Press of the over-sea Colonies, as well as in South Africa. Thousands of Yeomanry and Reserve men have never been properly settled with, and I expect that some dishonest ones have been paid twice over! The following extract is one of the many criticisms that I happen to have seen, and there is no doubt that the case is not at all over-stated, and that the existing system reflects very badly on our War Office:—

“NEGLECTED AUSTRALIANS.

Colonial Soldiers return to Sydney destitute.

(From our own Correspondent.)

Sydney, Saturday, June 30th.

Twenty-six wounded soldiers returning on the ‘Australian’ have arrived destitute. It is stated that they had only threepence between them!

They state that they were subjected to great privations owing to the want of clothing and other necessities. While at Cape Town awaiting shipment their case was made the subject of a strong protest to Sir Alfred Milner by the Australian local residents. Sir Alfred Milner, in replying to the charge of neglect, stated that he had not heard of it, but promised to rectify such a state of affairs in the future.

The New South Wales Patriotic Fund is cabling money to Cape Town for use in similar cases in the future, and the New South Wales Government has wired to the military authorities at Cape Town asking that more consideration should be shown to the Australians that are sent down from the front invalided.

The matter has aroused much indignation here.”

In some few cases blame rests on the officers commanding the various units up country; but, speaking generally, it is not they who are to blame but the system, and that could easily be remedied. The truth of the matter is that the issuing of last pay certificates is impracticable on active service, when an army is extended over a large area, as in South Africa. A man suddenly falls out, wounded or sick, and the officer commanding the company, squadron, or contingent, absolutely loses sight of him for months. The man may be invalided home, or sent to one of many hospitals in the country. The officer commanding does not perhaps hear of his whereabouts for months, and when he does hear, more often than not, he has not got with him his stationery box, nor the company accounts, so he cannot send off a Transfer Statement of Accounts (A.F.O. 1812). The consequence is that the man remains without any documentary proof showing the date to which he was last paid. Men's statements on this subject are so frightfully inaccurate that other officers are naturally unwilling to pay men who are strangers to them on their own *ipse dixit*; and consequently men are often for weeks, or months, without any money to buy tobacco, underclothing,

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socks, and other little comforts and necessities. This leads to a lot of grumbling, even among Imperial troops, and to Colonial troops it would appear as if, after having suffered much for their Empire, they were being neglected by the Imperial authorities.

Out of the quarter of a million men serving in Africa at any one time it is probable that there were at least 10,000 men wandering about the country at hospitals, or dépôts, detached from their own units, and without any documentary evidence showing when they were last paid, or to what they were entitled.

In lieu of the existing system I would venture to suggest the following, which, after all, is a modification of the system that already exists with regard to the payment of transport natives.

Each soldier on active service now carries an Identity Certificate (A.F.B. 2067) in a small pocket made for that purpose in his uniform coat. For that Identity Certificate let there be substituted a small book with parchment cover and thin non-tearing pages, just a trifle larger than A.B. 41, but with this difference: that there shall be two receipts instead of one in each counterfoil, the one marked "original" and the other "duplicate," but otherwise bearing the same number as the counterfoil.

Each counterfoil should have a place for the four weekly payments in each month. When a man is being paid by his own captain on active service, that officer could enter the amount in the counterfoil, four entries to correspond with the four weeks of each month, the pay-sergeant entering as usual the amount in the pay list, as is now done. When a man is being paid by his own captain, it would not be necessary to tear out a receipt, and at the end of each month the blank receipts belonging to the counterfoil that have been used might be destroyed. Then, if a man suddenly finds himself away from his own company on active service, at any time he could produce his book, go to the new captain to whom he was attached, and give documentary evidence to prove that he was entitled to a certain sum of money. The rate of pay would be on the cover, and the last entry by his old captain would show the amount and date of his last payment.

In the case of a captain paying a man who did not belong to his own company, he would have to get a receipt in duplicate from the man, one of which would go to the man's own captain, and the other should be sent to the chief paymaster of the District, whose office would be a kind of clearing-house.

If both captains belonged to the same District, as is the rule on active service, it would be merely a matter of charging one company and crediting another. If they were in different Districts, the one chief paymaster would arrange the matter with the chief paymaster of the other District. It would not matter when a final settlement was made with the man, or when his pay was charged against the War Office, and the man could continue to live on advances till a final settlement could be made.

The new captain would, when giving an advance, enter the amount in the counterfoil, and sign it, tearing out the receipt in duplicate. If the man has again to be paid by this new captain, the same process would be gone through; but if he passed on to a third captain, this officer would see by the counterfoil when he was last paid, and also the amount. He would, from the information on the cover, know the man's pay, and could give him an advance, as was done by the second captain. In this way a man might pass through the hands of many

captains, and each one would have no difficulty in making advances. Each payment would be proved by three separate signatures, so there would be little chance of all three being lost. At present we have only the monthly pay list, which in a campaign might easily be lost, and the men do not carry about with them any documentary evidence showing when they were last paid, which is a fatal defect in our existing system.

It may be said that a man may lose his book, but even then we should have as much proof of payment as we have now; and when captains were ordered to see that their men had their books with them always on parade; and when men got to understand the importance of these books, and that without them they could not get money, they would soon learn to value them and take care of them. If a man lost his book, another could be issued, and if the book contained the usual brief description of the man it would be of no use to another man.

As a man's clothing and boots generally are marked with his regimental number, it would be difficult for a dishonest man to pick up a comrade's book and to pass it off as his own, as the identity numbers would not agree. No system is, however, perfect, and if this proposed system does not completely defeat fraud, we shall doubtless be able to introduce checks in the future. It must, however, be remembered that the old system is very far from being perfect either, and cases of fraud have undoubtedly occurred under it during the late war.

As medical officers are also most anxious to introduce some system by which a man, wounded or sick, shall carry about with him from hospital to hospital some brief statement of the nature of his casualty, perhaps a blank page might be left for that; so the book might serve a double purpose.

It is useless to overload a paper of this nature with too many details, and many of these would have to be thought out hereafter. Enough has been said to show that this war has exhibited to us a defect in our machine, and that a new departure of some kind is needed, which should lie in the direction of making a man carry about documentary evidence as to former payments.

ALLOTMENTS OF PAY.

While dealing with the pay of individual soldiers it may not be out of place here to point out how very cumbersome our existing plan is, by which a soldier on active service gives a part of his pay to his wife. If a man's full pay is 1s. 6d., and he wants to give her 6d. *per diem*, the full amount of pay has to be drawn in South Africa, and then sixpence is sent to England, he being charged in his accounts. The paymaster at the dépôt pays the wife, and charges the War Office, who in their turn have to see that credit is given in the pay list of the company to which the man belongs.

All this entails a lot of contra entries, and hunting up of pay-lists to see if the man has been charged. It is calculated that as many as 15 per cent. of the Army Pay Corps clerks were engaged in nothing else but these allotments. This might all be avoided if a man drew his net pay abroad. If his full pay is 1s. 6d., and he wants to remit 6d., he should only draw 1s. in his company pay list. Meanwhile the staff paymaster of the dépôt should, on receipt of the necessary voucher (A.F.O. 1786) put the woman on a pay-list, and go on charging the

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War Office the allotment and the separation allowance until the husband returns to England or the wife rejoins her husband. Some such simple plan as this would save an enormous amount of clerical labour and trouble.

OFFICERS.

What is true for the men as regards Last Pay Certificates is equally true for individual officers, and, on active service, a pocket-book should also be carried by each officer.

Another defect in our system is the multiplicity of forms and vouchers that have to be filled up for each officer. We have a pay-list and a separate voucher for each of the following:—Rations, forage, field allowance, colonial allowance, and lodging allowance.

Experience shows that this multiplicity of vouchers causes confusion; and one pay-sergeant of an irregular regiment was so frightened at the number that he was directed to fill up, at the beginning of the war, that he at once sent in his resignation! Would it not be possible to substitute one simple pay-list, with a column for each of the allowances that have to be paid? The reason why the multiplicity exists is that there shall be a separate voucher to pass to each room in the War Office to check each allowance. But is this going on the principle that the War Office exists for the needs of the Army? The Army engaged on active service has more than enough difficulties with which to contend; and so the system in the War Office should be adapted to the needs of the Army. In other words, the boot should be made to fit the foot, and not the foot made uncomfortable because it does not fit the boot.

The paymaster who is responsible for audit could easily classify all charges by votes, so that there would be no difficulty in ascertaining how much is spent on each separate item.

CIVILIAN ARMY AGENTS.

During this campaign I have also seen how very injurious to the interests of the public generally it is to allow civilian agents, such as Cox & Co., Holt & Co., and Sir Charles McGrigor to draw pay for officers, as it not only deprives the individual of the experience of how to draw his pay and allowances in the field, but often an officer arrives on a campaign without a last pay certificate, without a cheque-book, and without any money. He goes to the pay-office, thinking that the paymaster is obliged to give him something, and great inconvenience arises. This is a fruitful source of worry and trouble, to say nothing of over payments, double payments, etc.

The plea on which these civilian agents draw the pay of officers is to save them trouble—as if officers in peace time were such an overworked body; and these agents are repaid by thus attracting to themselves, as bankers, a large percentage of the 10,000 officers of the Army. But I am convinced that they cause far more trouble than they ever save; and the worst part of it is that the trouble is caused on active service, just when everything should be made to run as smoothly as possible—for a campaign brings plenty of trouble of its own.

The Indian plan is for each officer to prepare a voucher for his pay and allowances once a month, and to send it to the pay-office,

asking for a cheque in return, or else asking that the money shall be paid into his bankers or remitted to his wife. The consequence is that each officer gets accustomed to preparing his own pay-list and vouchers during peace time, when he is not overburdened with work; and no change takes place on a campaign in the mode of procedure.

An additional advantage is that pay-office clerks get accustomed, during peace time, to auditing claims for officers, and to deal with them according to instructions. In other words, they are being trained during peace time for the duties that they have to perform in war time.

But our defective system is to allow civilian agents to do this work during peace-time, and then, when a war breaks out, the financial military clerks are untrained, and unaccustomed to dealing with officers' claims, some of which are very complicated. In some cases the officers ask their agents to go on drawing their pay, and rely on getting the paymasters to pay the allowances; and in other cases the officers draw both pay and allowances from the paymasters; so, consequently, confusion arises from a want of uniformity of system. Frequently allotments are made to wives which never reach them, and so they also are dragged in as victims to the existing system.

It must be remembered that during peace time financial officers and clerks are considerably in excess of the requirements of the Service, as a larger establishment must be kept up for war than is necessary during peace. It is so characteristic of our War Office that, when no war is going on, and the work could so easily be done by military men, we employ civilian army agents—just when they are not needed—with the result that our financial officers and clerks are deprived of the opportunity of learning a very complicated and very difficult part of their work; and the officers themselves are as helpless sometimes as children as to the right way to get their ordinary pay.

It will hardly be credited, but up to 1892 we not only employed civilian agents, but we actually paid them upwards of £20,000 per annum for doing that which could be done better for nothing by our own financial officers and clerks! That abuse was not swept away till some of the officers of the Army Pay Department exposed it. But when the War Office ceased to waste on these civilians this sum—which would have been so much better spent on the fighting efficiency of the Army—instead of making a clean sweep of all civilian agents, they allowed them to remain so, to the detriment of the Army, in a kind of honorary position.

The result of this is that not only are financial officers and clerks denied, during peace time, the necessary education to deal with very complicated questions, but directly an army goes on active service an enormous amount of work is suddenly thrown on to them, for which neither their training nor their numbers allow.

The consequence in South Africa was most disastrous; and it will reflect great discredit on us if it is ever repeated.

Agents exist in India as in England, but in India the authorities never wasted any public money on them, nor have they ever recognised them officially in any way.

If an officer wants his pay sent to his agents, his banker, or to his wife, he simply writes an order to that effect, and the officer who is responsible to audit his pay-list simply acts on his instructions; and it is not obvious why this sensible plan should not be adopted in the English Army.

While on the subject of these civilian Army agents, it will be observed, by a glance at the estimates, that a trifling sum of £1,500 is still paid to them for the payment of the Guards, and the sooner this relic of the past is swept away the better for the Army. If the Guards never went abroad, there is no reason why civilian agents should not pay them. But now that the Guards vie with other regiments to go on active service, these civilian agents cannot pay them then; so that the sooner they cease to do so in peace-time the better for the public service, as the practice is injurious, inasmuch as it maintains one system for peace and another for war, which is fatal to the interests of the Army, which should during peace-time be assimilated as far as possible to the actual conditions of war.

CONCLUSION.

I have dealt with our War Office civilians, with our Army Pay Department officers and their clerks, with our depôts, and with our regiments and companies; it only remains to draw this paper to a conclusion.

The past history of the way in which our finances were conducted shows the advantages, from the economical standpoint, of reducing financial work to a system. When I first joined the Service we had more than treble the number of War Office civilians that we now have. In addition, we spent a large sum of money on civilian Army agents, and had an enormous body of regimental paymasters, and a very large body of staff officers of pensioners. These were all engaged in finance, and among them they must have cost the public a goodly sum. None of them had any connection with each other, and there was practically very little system in the existence of rewarding the good ones and eliminating the bad. The Army Pay Department was then formed in 1878, and, slow as the process has been, from that time there has been a gradual working in this direction of system and order. Regimental paymasters were abolished, staff officers of pensioners were absorbed, and civilian Army agents were disestablished. In the light of subsequent events, it is amusing to think what opposition was raised to each proposed reform; and, no doubt, in years to come future generations will be amused to think of the opposition raised to my present proposal to reduce existing methods to one definite system. The savings have been enormous, and yet none of the predicted disasters have been fulfilled, and who will dare to say, in spite of our defects—which have been so terribly conspicuous in the recent war—the work is not better done now than ever it was in the old extravagant days?

We are, however, now suffering to a certain extent from a transition stage. We have gone too far ever to retrace our steps even if any advocated such a retrograde movement; but we are in considerable danger, because we have not yet gone far enough. Until the present time there has been no great war since the Army Pay Department has been formed, so there has been no great strain upon it; but the recent war has proved a very severe test, and has not reflected any credit upon our system, and one cannot but hope that more progress will be made before we again find ourselves embarked in a serious campaign.

The different methods that exist clearly show that our existing system is not the result of any carefully-thought-out plan, but rather the relics pieced together, with the inevitable results. At the time of the Crimean War, costly and foolish as was the financial system

that existed, still there was an apology for some system. New ideas have prevailed since then, and new plans have been adopted, with the result that the old obsolete system is broken up, but that none worthy of the name has taken its place. I believe that there is more chance of a break-down in finance than there was then. In those days we had a well-paid officer and a clerk for every battalion. It was a costly plan, but still it had its advantages. The Army has considerably increased since those days, and paymasters have considerably decreased, and unless the system is readapted to the changed circumstances, we shall be in great danger of a break-down.

It is, however, always well to look on the bright side of things; and this war, while it may have exposed the defects of our system, has also done another thing, for which we cannot be too grateful. It has shown us that, as in the combatant ranks, splendid material exists in the non-combatant branches of our Service, and that England may well be proud of its men. It has good, conscientious War Office civilians, it has splendid Army Pay Department officers, and military clerks, who pulled it through in spite of the appalling system. I have seen much of Continental Armies, and studied their financial system carefully, and some of them can boast of better systems than we can, but no nation can pride itself on having better men. But why should we muddle along any more? I am sanguine enough to believe that brighter days are about to dawn, and that soon the system will be levelled up to the men; and those who have the honour, in some future big campaign, of conducting the financial operations, will come out of it feeling not only pride in the men as we now do, but they will have the additional advantage over us in being also proud of the system, which will have reflected so much credit on the administrators of the past. It is with this hope that I have ventured to submit for the thoughtful, progressive minds of British officers who take an interest in every branch of their profession my experience of the lessons to be learnt from the late campaign.

CAMPAIGNS AGAINST INDIA FROM THE WEST AND THROUGH AFGHÁNISTÁN.

Translated and condensed from the Russian of Major-General L. N. Soboleff, by Lieut.-Colonel W. E. GOWAN, Retired List, Bengal.

(Continued from March JOURNAL, p. 313.)

XVI.—CAMPAIGN OF CHINGIZ-KHÁN.

In the year 1155 A.D. Chingiz-Khán made his appearance in the world; and his birth had a great influence on the superstitious Mongols.

His father died when Chingiz-Khán was only 13 years old; but by the time he was 50 years of age he had finally established his authority throughout Mongolia and had entered the ranks of great army leaders. The organisation, indeed, of his army surpassed that of any in either Asia or Europe contemporaneous with his own; and we may here observe that the success of his subsequent campaigns rested on that remarkable army organisation, and on his unusually strict military discipline. The rapidity of his successes amazed the whole world; but his attacks were characterised both by celerity of movement and dash in delivery.

By the summer of the year 1221 A.D. Chingiz-Khán had come into the possession of the whole of the western half of Central Asia, of Persian Khorassán (including Merv and Herát); whilst the cavalry force, which he had despatched under his generals, Chjebe and Subutai, had reached the Caspian Sea and had subdued the frontier provinces of North-Western Persia. With Bamián in his possession, Chingiz-Khán was now at the threshold of the gigantic Hindu-Kush range, which is a continuation of the Himálayan chain, and the natural boundary of India. Before the Mongols towered mountains rising above the limits of perpetual snow, with passes lying at an immense height; for from Bamián towards Kábul the direct road lies over two passes—the Irak and the Unai—of which the first lies at an altitude of 12,190 feet above sea level, and the second of 11,320 feet. Besides these two passes, however, there are others leading into the Kábul valley, more to the east of Bamián; and all of these passes are more or less practicable for troops in their passage from the valley of the Amu-Daria into India.

Hearing that Jalaluddin, the new Sultan of Kharezm (Khiva) had assembled near Ghazni (a place then renowned throughout the east for its strength and riches) an army of 70,000 men, Chingiz-Khán sent a force of 30,000 men, in four detachments, along the roads leading

towards Ghazni, Ghuri, Zābul, and Kābul. But some of these detachments were attacked and cut up by Jalaluddin and his general, Khān Malik. Whereupon Chingiz-Khān hastily collected a powerful force, with which he crossed the Hindu-Kush. Hearing of the rapid advance of the main body of the Mongol army, Jalaluddin decided to clear out of Afghānistān and to retire towards the Indus. Chingiz-Khān pursued him night and day, and soon reached Ghazni, where he learnt that Jalaluddin had 15 days previously withdrawn in the direction of India. Leaving one of his own officers as Governor of Ghazni, Chingiz-Khān continued to follow up Jalaluddin, making forced marches in order to overtake him. In their march from Ghazni the Mongols followed the Gomāl route over the Suleimān range, encountering no opposition. On reaching the Indus, Chingiz-Khān received information that Jalaluddin had prepared boats for the passage of the river on the following day, viz., the 21st December, 1221 A.D. Accordingly, Chingiz-Khān resolved upon an attack before his enemy could get across the Indus. The result of this battle was that Jalaluddin's forces were cut to pieces; but he himself escaped by swimming the river.

For the pursuit of Jalaluddin, Chingiz-Khān sent off two cavalry detachments, under his generals Bela and Turtai; but they could find no traces of the fugitive; so, having taken the fort of Biah, they proceeded to Multān. Finding that their detachments were not strong enough to capture this town, they devastated the provinces of Multān, Lahore, Ferozepore, and Malikpur, and then marched to regain the headquarters of Chingiz-Khān.

The Mongol army went into winter quarters in the mountain province of Buiya-Katavar, near the sources of the Indus, whence, in the spring of 1223 A.D., Chingiz-Khān moved forward, with the intention of marching through Tibet into Mongolia. Being checked in his advance in this direction by the natural difficulties of the country, he ordered his army to march towards Peshawar; and, in all probability, the route he then took was by the valley of the Kābul river. In the autumn of the year 1223 A.D. Chingiz-Khān passed through Bālkḥ. His Indian campaigns may be said to have finished here, for, after various wanderings in Central Asia, he returned, in the autumn or winter of 1224 A.D., to his own country, Mongolia.

The campaigns of Chingiz-Khān and of his generals present a striking picture of rapid raids carried out in various directions. They were, indeed, a series of tempests, of which history gives no other examples. The Indian campaigns of Chingiz-Khān are especially remarkable for the rapidity with which they were undertaken. Thus, setting out from Mongolia in the autumn of the year 1218 A.D., by the end of the year 1221 A.D., Chingiz-Khān stood, as a conqueror, on the banks of the Indus. This means that, in a little over three years' time, his main body marched not less than 3,333 miles, whilst, during the same time, the detachments sent out, under the sons or generals of Chingiz-Khān, traversed more than 5,333 miles.

The campaigns of Chingiz-Khān also teach us how much may be done with cavalry mounted on small horses, taught—as Mongol horses are taught—to endure long and rapid marches, with under-foot pasturage only for food, until such time as the summer heat enables them to be turned out to graze on the rich grazing grounds of a mountainous country.

XVII.—CAMPAIGNS AGAINST INDIA UNDERTAKEN BY THE MONGOLS
AFTER THE DEATH OF CHINGIZ-KHAN.

After the death of Chingiz-Khán, the Mongols continued the work, which he had begun, so that India was subjected to fresh Mongol inroads, of which, unfortunately, we have not now any exact or minute accounts. We know, however, that Turmenshir-Khán, a Mongol leader in the year 1240 A.D., conquered the greater part of North-Western India, and that his troops swam across the river Jhelum, after which they appeared before Muttra, on the river Jumna, and thence reached the basin of the Ganges. We know, too, that in the year 1245 A.D., the Mongols advanced through Tibet and across the gigantic Himálayan range, into the north-east corner of Bengal, and that, almost up to the beginning of the nineteenth century, they invaded the Punjáb by way of Afghánistán.

XVIII.—CAMPAIGN OF TIMUR-BEG OR TIMUR-LANG (TAMERLANE).

In the year 1333 A.D., in the town of Kesh (the modern Shahr-i-Sabz), there was born a boy, of the Turkish tribe of Berlas, to whom was given the name of Timur or 'The Iron One.' His father was ruler of the provinces of Kesh and of Nakhshab (or the modern Karshi).

From an early age Timur was initiated into the art of war, for we find him in the year 1356 A.D., whilst in the service of the Amir of Kazgán, taking part in the campaign against Khurassán. He was wounded whilst in Seistán, and thus became lame for life—on account of one leg being rendered shorter than the other. Hence he received the appellation of "Timur-Lang," which signifies "Timur the Lame."¹ At the age of thirty he captured Samarkand, which was destined to be his future capital, and drove his enemies thence across the Sir-Daria. On the 8th (20th) April, 1369, Timur was crowned King of Trans-Oxiana. Then, after organising an army and strengthening the principal strategical points, he undertook a series of campaigns which have gained for him a world-wide reputation as a conqueror and one of the greatest of army leaders. . . . After his second return from Persia, Timur conceived the idea of the conquest of still vaster sovereignties than those which had already acknowledged him, and so he directed his talented grandson, Pir-Muhammad, son of Jahangir, to advance to the conquest of India. Accordingly Pir-Muhammad, having subdued the Afgháns inhabiting the Suleimán range, conducted a heterogeneous army, comprising Mongols, Tatars, Persians, and Afgháns, to the banks of the Indus, which he crossed. This army, in all probability, reached India by the Gomal pass, a portion of it following the Thal-Chotiali route, which leads from Pishin to the town of Dera-Ghází-Khán. After the passage of the Indus, the Tatar forces stormed the town of Ushakh, and then laid siege to the fortress of Multán. Thus began the invasion of India by Timur's troops.

¹ Timur was of middle height and of strong build. He was possessed of a deep voice, which was often heard during the heat of an engagement. His adherents described him as a manly, handsome personage; but those who disliked him called him "a deformity."—*Author*.

Timur had started off to undertake the conquest of China—for he aspired to be the possessor of the whole of Asia; but, all at once, he altered his original plans, and, having marched towards India, joined forces with his grandson, Pir-Muhammad.

It was in the month of March, 1398 A.D., that Timur, having left one of his grandsons as ruler of Samarkand, set out on his Indian campaign. Ivanin, the historian, tells us that he took with him a force of 32,000 men, whilst his grandson, Pir-Muhammad, had under him at Multán, a body of 30,000 cavalry. These two bodies comprised the right wing of Timur's army of invasion; whilst the left wing, also of the strength of 30,000 cavalry, started from Kábul, and, after following the valley of the Kábul river, struck the Indus at Attock. Thus the whole army of invasion was of the strength of 92,000 men. But this was the regular army only, for, in addition, there was an irregular body, of probably even greater strength, for Marga, at page 86 of Vol. II. of his history of these times, says that the total strength of Timur's invading army amounted to 300,000 men, 200,000 being cavalry, and 100,000 infantry. And to this army, during its march towards India, there flocked representatives of every race; but all the commanders, and also the officers of all grades, were Tatars. Tatars, too, furnished the more important detachments, such as advanced parties and those on the lines of communications, etc.

On arrival at Termed, Timur ordered a bridge of boats to be thrown across the Amu-Daria for the passage of his army. His further route lay by Aznák and Saman-Khán; and, after he had crossed the Bakalán mountains, he pitched his camp at Indar-Ab.¹

Leaving his main body in summer quarters, Timur advanced into the heart of the Hindu-Kush. After making a rapid move on Panjan, Timur then detached a body, numbering 10,000 men, under the command to Mirza-Bustam, to the left to seek out the *Siyah-Posh*,² whilst he himself made for Fort Khavak (or "Kauk"), which lies at an altitude of 9,300 above sea level. Thence he crossed ranges rising to a height of 13,200 feet. Here he left his horses behind him and marched his troops on foot to the Ketuer Mountain. Although it was the month of June, masses of deep snow covered the mountains. The *Siyah-Posh* held the passes and precipices—for there were no pathways leading from the Ketuer Mountain to their fastnesses. In order, therefore, to descend, Timur's officers and soldiers had either to lower themselves down with ropes or slide down over the snowy surface. At length the *Siyah-Posh*, who made a fierce resistance, were overcome by the masses of men hurled against them. Timur's troops, during the fighting, made three night attacks; and, on the third day, the *Siyah-Posh* had to acknowledge themselves beaten and to agree to embrace Islám. But the next day they fell on one of Timur's regiments and destroyed it almost to a man. Timur, in his fury, then directed a general massacre of the *Siyah-Posh*, and a pyramid was erected of the heads of the slain.

¹ The Bakalán mountains deflect the course of the Kunduz river to the south of Ghuri; the place called Baglan or Bakalán lies on the Kunduz river, to the north of Ghuri. See Russian maps.—*Author*.

² An Aryan race inhabiting Káfiristán—a country so called because Muhammadans call these people "Káfirs" or unbelievers. The term *Siyah Posh* or *Shiaposh* is derived from *shia* (black) and *posh* (dress), from the black goat-skins which the Káfirs wear.—W.E.G.

Meanwhile, no news having been received of his left column, Timur despatched a party of 700 men to learn what had become of it. This reconnoitring party, after surmounting the most difficult obstacles, came upon traces of the lost column—of a strength of 10,000 men—which, having entered a gorge without crowning the heights, had fallen into an ambuscade, and had suffered severely at the hands of the mountaineers. In this plight the reconnoitring party found the column. The *Siyah-Posh* were then boldly attacked and defeated, and the rest of the column was saved.

Timur, having selected the most practicable way out of the mountains, returned to Khavak, his expedition to the *Siyah-Posh* glens having occupied 18 days. After strengthening this point, Timur left a garrison there, and returned to Kabul by the Tal pass.¹

Thence his troops marched through the Panj-Shir valley and pitched camp near the village of Barant. Thus an entire army crossed the Hindu-Kush by the Khavak and Tal passes without encountering any special difficulties.

The left wing of Timur's army, in its march on India from Kábul, crossed the Indus at Attock, so that its route lay through the Khaibar Pass. Whilst Timur was encamped at Durin he learnt that some Afgháns had destroyed a fort called Iridjáb, to the south of Kábul, and so he started off for this place, which he reached in four days; and in the space of 14 days he rebuilt the fort.

On the 5th (17th) September, 1398 A.D., Timur marched for Shenuzan. His route lay through forests and over mountains, but the day after leaving Iridjáb he reached Shenuzan. From here he despatched his son, Kalil, with a force to Bannoo, by the *Kipchak route*,² as convoy to his baggage train. Timur himself, at the head of a cavalry force, numbering several thousand men, then made a rapid advance on Nagaz,³ where he arrived on the morning of the 8th (20th) September, 1398 A.D.

Having settled scores with the Afgháns of the Pervian tribe, and with the Khelátis, Timur left a garrison of 500 men at Nagaz, and sent off, from here, Suleimán-Sháh, with a strong detachment, to Multán, to join the army of his grandson, Pir-Muhammad, whilst he himself marched with his main body on Bannoo, and so came out on the river Indus.

On the 11th (23rd) October, 1398 A.D., Timur, at the head of his main body, crossed the Indus. As we have already learnt, his left wing followed the Khaibar route from Kabul, whilst his right wing marched through the Gomal Pass—in all probability by the Tal-Chotiali route;

¹ Called "Tal" on Russian and English maps. Sherefeddin speaks of the same place as "Tulle," and in Courteille's translation of the *Babar-Namah* it is transcribed "Taoul" (see page 284, Vol. I. of that work). We have, however, adhered to Grigorieff's transliteration (see his *Kábulistán and Káfiristán*, page 567).—*Author*.

² A name which indicates that the troops of Chingiz-Khán, or, perhaps, the Mongols of the time of Uguz-Khán, had made use of the same route.—*Author*.

³ The place called Nagaz, or Nargazi, we find only on the map of *Afghánistán and Adjacent Countries*, by the Russian General Staff, 1858 edition, scale 150 *versets* (100 miles) to the inch. It is in the Kuram Valley.—*Author*.

and, since the main body, under Timur himself passed through Nagaz—which we are disposed to identify as Kuram—and came out directly at Bannoo, it follows that this portion of Timur's invading army must have taken what is called "the Kuram route."

On the 13th (25th) October, 1398 A.D., Timur gained a decisive victory over the Indian troops under Shaheddin-Mubarak; and, on the 23rd October (4th November), having made six marches forward, Timur pitched his camp on the banks of the Chenáb. On the 26th October (7th November) his army crossed this river by a bridge of its own construction. On the 29th October (10th November) his troops crossed the river Talab, and pitched camp on its banks.

On the 6th (18th) November Timur's forces came to a lake near the river Beás.¹ Here, having again routed the enemy, Timur moved the following day, to Shanavaz. From here he floated his army down the Beás, and reached Janjān in three days. Thus the main body of the Tatar army, which had left Multán to the north, established its communications with Lahore.

Multán, after a siege of six months, had fallen to the right wing of Timur's army of invasion; but, subsequently, the inhabitants of this place, seeing the weak condition of the garrison, renewed hostile operations, and, having killed the Tatar officials set over them, forced Pir-Mahummad's forces into the city, which they, in turn, besieged. The appearance of the Emperor, at this juncture, saved his grandson's army corps; and, on the 11th (23rd) November, communications were once more established and a union of Timur's forces effected.

From Multán Timur sent off his baggage train, viâ Dipalpur, to Samāne, a town lying between Lahore and Delhi. He himself then pushed forward at the head of 10,000 horsemen, and, on the 23rd November (5th December), attacked the fort of Butnir, lying on the direct road midway between Multán and Delhi (at a distance of about 200 miles from either point). On the 25th November (7th December) Butnir fell to the Tatars, who, having pillaged it, laid it even with the ground and put almost all its inhabitants to the sword.

From Butnir Timur marched, in a north-easterly direction, for Kinara-Hauz, viâ Fort Firuza, the town of Seresti, and Fattiábád. All the people of the country *en route*, who would not profess Islām, were given over to destruction. On the 4th (16th) December Timur passed through the towns of Rajabnur and Arguni, and, on the following day, arrived before the town of Taukhāna. Thus he gradually closed in upon the north-east of the country with his main body. The Tatars destroyed all the Jāts² along the line of their advance; and, after his arrival at Munuk, Timur spent several days in the most merciless

¹ No lake now exists at this place; but, on the Russian map of *Afghánistán and Adjacent Countries*, the channel of a former river is shewn.—*Author*.

² "The name of a very numerous race of people in the North-West Provinces, the Punjáb and Sindh, whose origin is not well determined, some authorities saying they are descended from the White Huns, others that they are a mixture of the Rájputs and the Gete. They seem to have entered India at many periods, far apart, but only from the region of Ghazni and to the west of it. . . . They are a brave and hardy race. The Rajahs of Bhurtpur, Dholpur, Patiala, Jind, and Nábha are of the tribe.—*Anglo-Indian Dictionary*. By George Clifford Whitworth."—W.E.G.

destruction of such members of this race as had hidden themselves in the country round.

On the 13th (25th) December Timur was joined, by his left wing, at the bridge of Fulkubli, close to the town of Samáne. This wing, which had marched from Kábul, crossed the Indus at Attock, and thence advanced victoriously through the Punjáb, capturing many towns and forts as it passed along. On the same date Timur's main body also came up. Timur then crossed the Jumna by the Fulkubli bridge, and the next day appeared before Delhi, the capital of India.

By the 4th (16th) January, 1399 A.D., Timur's Imperial standard was waving on the walls of Delhi. The capture of Delhi and the destruction of Sultan Mahmúd's army placed in Timur's hands a considerable portion of the country. Two days were spent in the pillage of Delhi; and, on the 18th (30th) January, 1399 A.D., Timur marched down the Jumna and appeared before Muttra, which fell, after an assault, on the 26th January (7th February). From Muttra Timur directed his army towards Toglokpur, in the Ganges valley. From this point he marched in a north-easterly direction. On the 8th (20th) February he recrossed the Jumna, on the 21st March (2nd April) he recrossed the Chenáb, and on the 24th *idem* (5th April) he reached Hebgán, on the frontier of Kashmir. On the 25th March (7th April) Timur quitted his army and started for his own capital, Sámarkand. Within two days he had recrossed the Indus, and on the third day he arrived at Bannoo. On the 2nd (14th April) he rode to Nagaz or Nargazi—the modern Kuram—where he halted for 24 hours in order to superintend the fortifying of this place, to which he attached great importance in a strategical sense.

From Nargazi he rode on to Kábul, and thence he crossed by the Shibr (or Shibrtau) pass of the Hindu-Kush to the town of Kesh (or Shahr-i-Sabz), his own birthplace. From Kesh Timur reached his capital (Sámarkand). Thus ended Timur's famous campaign against India.

XIX.—CAMPAIGN OF ABU-BIKR-MIRZA.

Abu-Bikr-Mirza's invasion of India followed that of Timur's; but, unfortunately, we have no detailed particulars of this campaign. We have, however, with regard to it the very valuable reference in Bábar's Memoirs, which runs as follows:—'He (Sultán Hussein, great-grandson of Timur, who was born in the year 1438 A.D., and who died in 1505, after a reign of nearly 40 years), was no less fortunate in his engagement with Abu-Bikr-Mirza, who entered Irák, and, having formed an alliance with the Kára (or black) Turkumáns, defeated, with their aid, Ulug-Beg-Mirza at Tekaneh and Himaria, and obtained possession of Kábul. Then, having heard of disturbances at Irák, he quitted this town, following the route viâ the Khaibar Pass, Khusháb, Multán, and Sibi. Consequently Abu-Bikr-Mirza, in leaving India for Persia, must have crossed one of the southern routes over the Suleimán range—probably by the Tal-Chotiali route.

XX.—CAMPAIGN OF THE EMPEROR BABAR, THE FOUNDER OF THE DYNASTY OF THE GREAT MOGUL.

In a far-off corner of Farghána (formerly the Khánate of Khokand) there was born, towards the end of the fifteenth century, an infant

whose real name was Zahr-Ed-Din Muhammad, but who is known in history as the Emperor Bábar. On his father's side, Bábar was the direct descendant of Timur,¹ and, on his mother's, of Chingiz-Khán, so that there coursed through his veins the blood of two great Asian conquerors. Amongst his other gifts he was a remarkable writer, for he left behind him the celebrated Memoirs called the *Bábar-Namah*, of which certain passages surpass the famous "Commentaries of Julius Cæsar."

Bábar's description, too, of Kabulistán, for accuracy and clearness of style, might serve as a model for even modern geographers. For instance, the following observations made by Bábar enable us to rightly estimate the value of the western group of the Hindu-Kush passes:—

"The mountain range of the Hindu-Kush rises between Kábul, on the one side, and Bákh, Kunduz, and Badakhshan on the other. These mountains can be crossed by means of seven passes, of which three are in the Panj-Shir direction. The highest of these three passes is the Jevak or Khevak or Khavak, the lowest is the Taul or Tul or Tal; the third pass is called Bazarak. The best is the Taul or Tal, which receives this name, probably, because it is longer than the others. The pass with the most direct route is the Bazarak; both this and the Tal unite at the Siráb or Sir-i-Ab river. The people hereabouts call the Bazarak Pass *Barendi*, from the name of a personage who once came down from the pass. There is also a tract called Parwán, which is usually referred to as Haft Bacha (or 'The Seven Infants'), because between Parwán, a village in the Panj-Shir valley, and the main gorge, there are seven smaller gorges. Two roads from Indar-Ab join at the main gorge, and lead to Parwán through these seven smaller gorges, but the track, after the junction of these roads, is extremely difficult. There are also three roads leading from Gur-bend or Gor-band; that which lies nearest to the Parwán road is called Yangi-Yol (or 'The New Road'). By a gorge on this road there is a descent to Velián (Valián) and to Hindján. Another road passes through the Kipchak gorge and descends to the point of juncture of the rivers Kizil-Su and Indar-Ab; this road is an easy one. There is also a road which runs through the Shibrtau or Shibr Pass, and another through the Panj-Shir gorge. In the summer season, when the streams are full and rapid, traffic goes by the Shibr gorge and through Bámbian and Sikan (Sigan), but, in winter, the route viâ Ab-Darah is used. But for four or five months—i.e., during the worst season of the year—communication ceases over all the roads named, except through the Shibr gorge and over the Ab-Darah route. In the summer season, however, when the mountain streams are full and rapid, the approaches to Ab-Darah are under water. It is only in the autumn season, then, or for four or five months in the year, when the snowfall is scanty and when the level of the water in the stream falls, that the Ab-Darah route is practicable."²

It is not our intention to take up in this paper the early military career of the Emperor Bábar. We shall, therefore, open our account at

¹ Omar-Sheikh Mirza was the name of Bábar's father, and he was the great-grandson of Timur.—*Author*.

² For more detailed information regarding the passes of the Hindu-Kush, reference should be made to Grigorief's *Kábulistán and Káfristán*.—*Author*.

that stage when the proud Khozreff, leader of the Mongols, submitted to Bábar, between Kunduz and Kábul, after 4,000 Mongol families had deserted from his ranks. It was this circumstance which induced Bábar, who was a pure Turk, to call the new dynasty which he founded in India, the dynasty of the Great Mongols or Mogols.

On the day after Khozreff's submission Bábar pitched his camp in the neighbourhood of Dushi. From Dushi he went to Khoza-Zend, and crossed the Hindu-Kush in four marches. From that place he came out into the valley of Gorbend (Gurband). He was now in the basin of the river Indus; and the die was cast.

In the month *Shabán* (corresponding with May, 1504 A.D.) Bábar marched towards India. In six marches he reached the fort of Adinapur,¹ which lies on the Surkh-Rud, or "the red river." His onward route lay through the Khaibar and Jamrud². After a halt at Kohât of two days, Babár marched his army by the Hangoo road towards the Bangash country, which lies between Kohât and Thal. After the Bangash and Nagar hills are passed, Bannoo territory becomes a perfectly smooth plateau, bounded on the north by the same hills. The river Bangash (or the name of the lower course of the Kuram river) debouches on to this plain. To the south lies Chupara and the river Indus, to the east Dinku and to the west Dasht (also called Bazár or Tank). From Thal, Bábar followed the direct road to Bannoo. This in places proved to be a mere track; and during the second day's march there was an extraordinarily steep descent, followed by a long gorge, through which Bannoo was reached.³

At Bannoo it was reported to Bábar that Dasht (or Bazár or Tank) was connected with Farmol by an excellent road. Accordingly the next day his army marched in that direction, and pitched camp near the village of Isa-Khel, which is situated on the Bannoo river. From Dasht to Farmol there are two roads, one called the Sang-Surakh, which passes through Barah and comes out at Farmol; the other follows the left bank of the Gomal river, and likewise comes out at Farmol. The latter road seemed to be the most frequented. It is stated that beyond the Mehtar-Suleimán hills—which lie between Dasht and Duki—there is a level road, but that this is longer than the one skirting the Gomal river, and that one or two passes have to be surmounted *en route*. Bábar elected to make use of the road along the Gomal river, across which he found a ford, and by this his army soon crossed to the right bank. His troops then turned southwards, and moved along the southern slopes of the Suleimán range, and so reached a place called Bila on the fourth day's march. This village was, at that time, a dependency of the Multán administration; it is situated on the banks of the Indus. For the next five days Bábar's army followed the right bank of the Indus. On the sixth day it left the river and reached a burial-ground called Pir-Khán, which lies at the foot of the Suleimán range, and which, in those days, was a place of pilgrimage. From here an advance was made to a gorge, at the head of which the troops bivouacked. Thence they moved to the bank of one of the streams which water the Duki district. The next two marches brought Bábar's

¹ See Grigorieff's *Kábulistán and Káfristán*, p. 45.—*Author*.

² From Jamrud to Kohât the distance is 33½ miles.—*Author*.

³ Bannoo is situated at the entrance to the Kuram Valley as approached from India.—*Author*.

army to the village of Chotiali. The route onwards lay viâ Ab-Istada to Kâbul. Bábar's troops made six marches to the lake, and pitched camp on the banks of the Katteh-Vaz river, which falls into the lake. Although it was the summer season, the bed of the river, usually dry,¹ was so full of water, from the heavy rain that had fallen, that the troops could not find a ford, and so they, as well as the camels and horses, had to swim across. In order to get the heavy baggage across, ropes had to be thrown from bank to bank, but not to a great distance, the river bed being narrow at this point. After the passage of the Katteh-Vaz river Bábar's troops crossed the Keyatukh-Páni, and then, marching over the Sardeh dam, to the south-east of Ghazni, re-entered that city. On the following day Bábar marched his army towards Kâbul, which was reached in the month of *Zilhijjah* (corresponding to September); so that, as the army had started in the month of May, the entire march occupied four months. During this period Bábar's troops, after marching from Kâbul to Jamrud, skirted almost the whole of the eastern frontier of the Kâbul and Ghazni provinces, a portion of the southern frontier of Afghánistán, flanked the eastern portion of the Indian frontier, and traversed the southern portion of the province of Kandahar. The whole distance traversed cannot, therefore, have been less than 900 miles. The march was of very great use to Bábar, as it enabled him to inspect a considerable portion of the frontier of his new possessions and to establish his authority therein; and he also obtained the opportunity of reconnoitring a very large extent of the western frontier of Hindustán, and of becoming acquainted with the inhabitants. He, at the same time, carried away with him a deep impression of the warlike Afgháns and of their unrestrained love of freedom. He knew then that he would have to subdue them, cost what it might.

Bábar's position in the year 1505 A.D. was a very precarious one, for he had not yet succeeded in strengthening his position at Kâbul; and he clearly perceived that his future depended, to a considerable degree, on the general state of affairs in Central Asia.

In the autumn of the year 1505 A.D. Bábar undertook his conquest of the Kandahar province. On arrival at Khelát-Ghilzai,² Bábar directed a general attack on this fortress without making any previous reconnaissance. A severe hand-to-hand fight ensued, which lasted until evening. Meanwhile, many of Bábar's officers and men had fallen, and the attacking troops, whose strength was beginning to fail, were upon the point of retreating, when, fortunately, at this crisis, the defenders of the fortress made offers of surrender.

Bábar's troops now marched southwards, and, after making several raids upon the Afgháns at Sava-Sang and Ala-Tagh, to the south of Khelát-i-Ghilzai, they returned towards Kâbul.

(To be continued.)

¹ Bábar says that although his troops crossed this river many times, there had never before this occasion, nor was there again, running water in it.—*Author*.

² Distant 228 miles from Kâbul, 144 miles from Ghazni, and 88 miles from Kandahar.—*Author*.

WHAT HAS THE BOER WAR TO TEACH US, AS REGARDS INFANTRY ATTACK ?

*A lecture delivered before the Military Society of Berlin, 5th March, 1902,
by Lieut.-Colonel von LINDENAU, of the German General Staff.*

(Concluded.)

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(Continued from March JOURNAL, page 325.)

15. THE ADVANCE BY RUSHES.

A change in the former mode of advancing by rushes appears to be not only necessary, but of vital importance. The extent of frontage employed by units when advancing by rushes has to be limited just as much as the time occupied has to be curtailed.

In the "Military Observations on the War in South Africa," we are told that "men usually got up to advance with hesitation, and one after the other, thereby affording a watchful enemy time to receive those getting up last with a well-aimed fire. Similarly, short rushes, carried out in longer lines, become too costly to admit of their being continued for any length of time. Smaller groups, on the contrary, can move in such a manner as to occasion surprise, and surprise, in my opinion, is the only thing which can make a rush successful. Accordingly, the rush should only last so long, as it takes the enemy time to recover from the surprise. Anything, therefore, which is calculated to attract his attention, such as a sudden cessation of fire, must be carefully avoided, and this can only be brought about by utilising the troops in small detachments."

If the manner in which the British advance was conducted was the same as described to us, all that one can say is that it could easily have been better carried out, and that, too, without much trouble. It only requires practice, or rather exact drilling. The men should all rise together. After good practice, too, even rushes made with a broader front than is possible with small groups can be carried out surprisingly swiftly. The advance by battalions and even by larger units—which is, indeed, laid down by regulation—must be given up. Expressed in periods of time, the rushes of single companies acting together should last as follows:—

	Seconds.
For a company on war strength	8 to 10
„ section	8 to 10
„ squad	7 to 10
„ group	6 to 7

the command to advance being given immediately after a lively fire.

These intervals of time are inconsiderable even when opposed to magazine fire at the rate of about twelve shots a minute.

Accordingly, there is no very great difference in the advance by companies, sections, half sections, or squads, if troops have been properly trained beforehand. I am convinced that if we practise the attacks with the same degree of diligence and thoroughness as we have formerly devoted to other drills, and leave nothing undone until the qualities of marksmanship have become the soldier's second nature, we will then obtain results which will offer us a surer guarantee of safety, and one which other armies will not be able to copy too quickly. In this respect, I take the liberty of inviting attention to a Beiheft of the *Militär-Wochenblatt* (12th November, 1901): "Are we training our Infantry to fight?" This Beiheft contains many valuable suggestions, and its author was the then Lieut.-General Freiherr von der Goltz.

The difference in the time occupied in rushing is, as we have seen, so small between a squad and a company that it has nothing to do with the question as to how strong detachments for rushes ought to be. The following considerations are, however, of great importance.

Such a large unit as a company on war strength rushing forward together offers a far larger target and suffers more losses than one smaller in size. The most natural idea, and apparently the best, is as a general rule to move with a smaller front, say by sections, and the attacks should be carried out in the same way as the Boers carried out theirs on Spion Kop and in other places. In other respects the mode of fighting adopted by the Boers is in the case of our large units one involving many disadvantages.

When fighting on a larger scale takes place, it is essential that a given breadth of front should be allotted to each unit. These must fight in the place assigned to them; they cannot, like the Boers, fight wherever they please. The smaller the size of the unit chosen to carry out the attack, the more necessary is it that each should know its place; otherwise, the commander's task becomes one of increased difficulty. In these formations leaders are required who should be as careful and as highly trained as they should be brave and fearless.

It is only by the personality of the officer or his subordinates that the success of an operation can be assured. Accordingly, from the standpoint of leadership, the section on war strength is the smallest unit which can be practically employed. Only then will there be a security that the points selected for attack will be kept to, and due allowance also made for the possible requirements of the tactical situation.

It is the officer alone, above everything, who will be the guarantee for the certain carrying out of the attack, especially when it is likely to prove difficult.

The remarks on this subject in "Tactical Reminiscence of 1866" ("Taktischen Rückblicken auf 1866") are to the point:—

"In war, when a man is suddenly brought face to face with a dangerous situation, he feels the want of having someone near him whom he can count upon as fully appreciating the situation. His eye naturally turns to his officer. A look from the latter reminds him that here, as in peace, obedience is a necessity, and if the officer advances coolly and without hesitation, the reasons for his action will not be questioned. Ambition and patriotism have really far less influence on a man than confidence in the person of his officer, for it is the latter

alone who can extract from the soldier his highest qualities. He who believes that *all* our soldiers are heroes, because they are sprung from a race which is brave, is making a mistake. If only every soldier in action voluntarily did his simple duty, we should indeed have an invincible army that would require no tactical instruction.

I have purposely quoted the above words written by a brave officer of the army of 1866 (in the full flush of the victory of Königgrätz, and who died afterwards a soldier's death in the campaign of 1870), to avoid being accused of pessimism, if I do not believe that we can entrust with safety the leading of the majority of our men to the non-commissioned officer or the private soldier, though this must take place when working in sections or half sections. I think therefore that thorough deliberation and experiment are necessary before we can fix the breadth of front to be adopted by troops in the attack when advancing by rushes. That control must be delegated is, however, certain. But practical experience yet to be collected will soon regulate this.

The length of time taken in making rushes depends on other considerations. The British Drill Book, section 115, lays down the extent of the rushes at from 30 to 40 yards, whilst in the war, following our example, they made rushes of from 60 to 100 yards. There are several positive reasons for justifying such a course.

In view of the increased effect of modern firearms and the extraordinary rapidity of magazine fire, the duration of a rush should not be long enough to admit of the opponent taking proper aim. Accordingly, in my judgment, if the whole action is to culminate in an advance by rushes, these must be made in small numbers, and above all else irregularly when moving over open country. The further away from the opponent the longer must the rushes be, the nearer to the opponent the shorter. As an instance, up to 800 yards they might be estimated at 40 yards, from 800 yards onwards they ought not to be more than 25. From 800 yards onwards, if there is a want of all cover, this distance of 25 yards must be covered by creeping, or if this word be distasteful to Germans, by moving forward "prone."

A few instances of the time occupied, by certain companies who have practised these movements may not be without interest.

An advance of 80 yards lasts from 26 to 31 seconds.

An advance of 40 yards lasts from 17 to 18 seconds.

An advance of 25 yards lasts from 10 to 11 seconds.

The same distances covered creeping or "prone" occupy from 49 to 60 seconds, the rifle being slung about the neck, both hands remaining free for the forward movement. People would be surprised at the celerity with which such a manœuvre can be performed, even with little practice, and how much the speed can be increased by practice. If one remembers that in real war after such advances of 25 yards, halts to fire take place, which will be much longer than we in general are inclined to believe, the repeated employment of this mode of advance in exceptional cases may not be considered necessary. As against short rushes, the objection may be made that they compel the firer to abandon the protection of cover, oftener than in the cases of long rushes, and that therefore the principal difficulty in the attack, and that on which success so much depends, is to induce men to leave cover and continue their advance.

The answer to this is to be found in the following lesson from the Boer war.

In the case of long rushes losses increased to such an extent that the attack in most cases failed at medium ranges under the defender's rapid fire. *An attack carried out by long rushes has no chance of success nowadays.* The much smaller losses which the attacker suffers when advancing in short rushes diminish the difficulty in getting the men forward, and they therefore afford a greater guarantee for the success of the attack.

Finally, in the advance by rushes, attention must be directed to the following point, both on the parade ground and in the manœuvre field. It arises from the inclination to curtail the period of attack, and in actual war this may lead to disaster. When detachments are advancing alternately there is great danger in one moving forward before the other has properly established itself and commenced to fire afresh. This means the voluntary surrender of the support obtained by fire, which is the very best means of making the forward movement possible.

16. SUMMARY.

It has only been possible to include the most important lessons in the narrow scope of this lecture. There are still many details, which are not without interest, such as the important question of better reconnaissance before the attack, the formation for this purpose of "scouting commandoes" (*Jagd-Kommandoes*) and the mounted infantry. Opposed to this are the manifold complaints of British officers over the diminishing of the intrinsic value of the troops for the attack, when they have been robbed of their best elements owing to special duties being continually imposed on them.

This failing appears to have been more felt on the battle-fields of South Africa than formerly, because before the final stage of the attack, a large number of officers and non-commissioned officers either fell or were put out of action. And when loss followed loss, which owing to the smokelessness of the field had a more injurious moral effect than formerly, complaints were made that it was just the best troops who had been sent away from the front. There can be no doubt, the best troops must be in the greatest numbers in the firing line, because, thanks to their better individual training and their whole soldierly education, they keep head and heart together, whereby they help to encourage waverers and carry them forward. There is no doubt, of course, that the Russian "scouting commandoes" have some advantages. They will often find opportunity to shoot down the enemy's cavalry and reconnoitring patrols, and by making skilful use of ground, establish themselves on the flanks or throw themselves on the flanks of the opponent. In spite of this they must be condemned, as these advantages have been obtained at the cost of the internal efficiency of the troop and the uniformity of its training. The French have recognised this clearly and have given up the training of scouts as a special body. They have, in fact, retained their use under normal conditions, and no longer collect them together from the best troops of the different units, employing instead whatever section or half section is immediately handy. Officers, and secret patrols, provided with good glasses, should be sent on in advance in the direction of the enemy. This seems to be the simplest way of carrying out

infantry reconnaissance. Systematic rules limiting their duties, such as for example number 43 of the Titre V. (*école du bataillon*) for the new French drill book gives "pour l'éclairer généralement à 400 ou 500 mètres" appear to me to be of little advantage. It is more important to direct fighting patrols to points in the country, which afford them a good surrounding view. It is also a point for consideration whether they should not be equipped with telescopes which can be quickly set up on a tripod, and also range-finders. These better instruments for observation could easily find place on the ammunition wagons of the company.

In any case the necessity of close infantry reconnaissance, in so far as it serves the immediate purpose of the battle, requires specific mention in the regulations, but, in my opinion, with the express reservation that the orders published in the interest of the primary efficiency of the troops may not be exceeded. The full meaning of this is that there should be no more "scouting commandoes," nor mounted infantry (for the latter are taken from troops who should otherwise be employed in the front line).

The war has clearly shown the importance of thoroughly training troops, so that they may be capable of coping with the astonishing effect produced by modern fire-arms. No man should be detached from the front line without the strongest reasons. Special formations must of course be employed in special cases, otherwise losses cannot be avoided.

Organisation and preparations for mobilisation must be continuously directed to developing the intrinsic value of infantry, and making it more skilled in warfare in every respect. If one throws a general glance at the infantry attack, as experienced in the war, one can clearly see that every endeavour to lead the attack forward fails lamentably, when carried out by troops acting together on purely mechanical lines. It is only when it forces its way forward from fire position to fire position, by means of an untiring and unwearied employment of fire, such as our regulations demand, that it is certain to make progress. Where such a fire position is not to be found, the attack cannot be carried out without further preparation over open ground without courting the prospect of failure. The thing to be done in such a case is rather to create such a fire position by means of the spade, under cover of darkness, or to remain at rest until success has been obtained at another point on more favourable ground.

The most significant lesson of the Boer war is, that it has clearly shown us what results may be expected from too hastily conducted attacks in the face of modern fire-arms. The greatest fault with our infantry is the excessive haste with which they are frequently let loose and driven forward, "the bullying of troops when attacking," to use the words of the lieutenant, who often hits the nail on the head in such matters.

The Boer war also teaches us in the most distinct manner that the principles of our regulations are quite sound. They warn us against the mistakes of system and principle, into which the English fell when they endeavoured to advance to the attack on the enemy by means of their legs instead of with the help of their rifles.

The similarities, which were apparent in South Africa, between ours and the British plan of attack by no means touch on the principles which our regulations lay down for the attack, but are

only offshoots of the same, which arose in places out of the false interpretation of the principles of the regulations. To avoid these in future, to ensure that the license allowed does not degenerate into arbitrariness, the paragraph on the attack in the regulations must be more binding. At the same time, in view of the experience of modern war, some of the regulations must be altered so as to bring them into harmony with the increased power of modern weapons.

If I am to conclude my remarks by a summary of instances where such alterations are advisable, they would be the following:—

17. NECESSARY ALTERATIONS OF OUR REGULATIONS.

1. Increase in breadth of front up to those of a brigade (change in sections II. 25 and II. 115).

2. More definite instructions as to the time to be given to the carrying out of the fire fight (change in sections II. 32 and 33, and II. 51), greater stress on the efficacy of the fire-arms, *especially at medium ranges*, examination of the question whether the scope of the musketry instructions contained in section I., 132 and 133, taken together with section 160, might not be further extended.

3. More detailed instructions regarding the employment of *close and open firing lines*, and the method of filling up gaps (change and enlargement of sections I. 123, II. 90 and 91). *Limitation of the employment of small supports*, and instructive discussion on the different possibilities for their being brought forward (change and enlargement of section II. 93); increased intervals of the lines in rear as regards distribution in depth, in such a way that section II. 76 and section 28 of the firing regulations for Field Artillery may be brought into accord.

4. New regulations on the advance by rushes (change in sections I. 127, and II. 40 and 41).

5. More comprehensive arrangement of the paragraph dealing with the attacks, section II. 82, by putting all the remarks bearing on the subject together, under this paragraph, even at the risk of repetition, as they are now scattered all over the place, in order that its contents may be the more easily understood for application on the parade ground. The paragraph must, after a general remark on the subject, clearly show the differences which exist between the attack over open and the attack over close country. It must also contain more definite remarks on the use of the spade, and the help to be obtained by darkness.

6. Instructions regarding *infantry reconnaissance* in so far as the same serves the purpose of the fight.

CONCLUSION.

In all its points, the infantry attack of the future will require more *individuality* than ever it did. It will have to be carried out according to the nature of the country, either by rushes, by lying down from time to time, or by running, as occasion may demand, and supported by fire from well chosen positions, especially on the flanks. It will sometimes go on for hours in detached halts to fire, in the endeavour of either side to obtain a superiority of fire. The hope of having obtained this will often prove a fallacy and fire will have to be re-opened.

Dogged perseverance and steady endurance will accomplish more than impetuosity of movement. Progress will be all the more certain in proportion to the preparations made, and the contingencies allowed for beforehand.

The increased effect of modern fire-arms has caused France and Austria to fundamentally alter their Infantry Drill in 1901. Even Russia's Army has received at the hand of Dragomirow new fighting instructions for the benefit of troops of all arms. We are in the happy position of not requiring a new Drill Book. But we must make the spirit of our present one more in accord with the increased efficiency of modern fire-arms, as regards the orders and formations contained therein, and we must endeavour to improve ourselves by the experience gleaned from the examples here collected. Thus the infantry attack will in future maintain its tremendous power, and will continue to be the surest method by which a general can hope to win his laurels.

NAVAL NOTES.

HOME.—The following are the principal appointments which have been made: Captains—C. H. Moore to "Sirius"; C. H. Cross to "Britannia"; G. A. Callaghan, C.B., to "Asia," for Dockyard Reserve; H. B. Jackson to "Cæsar"; R. H. Stewart to "Naiad"; H. Evan-Thomas to "Majestic." Commander—H. J. Miller to "Torch."

The Royal Yacht, with His Majesty on board, left Portsmouth at 9 a.m. on the 31st ult. for Lisbon, the second-class cruisers "Venus" and "Minerva" acting as escort; she arrived in the Tagus on the afternoon of the 2nd inst., leaving again on the afternoon of the 7th for Gibraltar, where she arrived a little after noon on the following day. His Majesty left again at mid-day on the 13th inst. for Malta, the escort being increased by the armoured cruisers "Bacchante," flying the flag of Rear-Admiral Sir Baldwin Walker, Bart., C.M.G., commanding the Mediterranean Cruiser Division, and "Aboukir," with the second-class cruisers "Diana" and "Vindictive," which had been detached from Malta to await the arrival of His Majesty at Gibraltar.

Admiral Sir H. Stephenson, G.C.V.O., K.C.B., has been appointed First and Principal Naval Aide-de-Camp to the King, in succession to Admiral Sir E. H. Seymour, G.C.B., O.M., who vacates the appointment on becoming Commander-in-Chief at Plymouth. Admiral Sir E. H. Seymour hoisted his flag at Devonport on the 28th ult., the flag of his predecessor, Admiral Lord Charles Scott, G.C.B., being struck at sunset the same day. Vice-Admiral Lord Charles Beresford, C.B., will succeed Vice-Admiral Sir A. K. Wilson, K.C.B., in command of the Channel Squadron, on the 17th inst. The second-class cruiser "Arethusa" arrived at Plymouth on the 4th ult. from China, and paid off at Chatham on the 2nd inst. The third-class cruiser "Scout" arrived at Spithead on the 5th ult. from the Mediterranean, and will pay off at Portsmouth. The first-class battle-ship "Resolution," First Reserve ship at Holyhead, paid off at Devonport on the 8th inst., her officers and men turning over to the first-class cruiser "Edgar," which is to take her place. The first-class cruisers "Spartiate" and "Europa" commissioned at Portsmouth on the 17th ult. for relief duty, and will convey to Hong-Kong new crews for the first-class battle-ship "Ocean," the sloops "Algerine," "Phoenix," and "Rosario," the river gun-boats "Sandpiper," "Woodcock," and "Woodlark," and the surveying vessel "Waterwitch," all of which are to be re-commissioned at Hong Kong; the "Europa" and "Spartiate" left on the 25th and 26th ult. respectively. The second-class cruiser "Sirius" commissioned on the 17th ult. at Devonport for the China station, where she will relieve a sister-ship, the "Pique," and left on the 31st ult. for her destination. The first-class battle-ship "Canopus" arrived on the 22nd ult. at Portsmouth from the Mediterranean, and will pay off at that port, when she will be sent to Messrs. Laird, at Birkenhead, for repair. The second-class cruiser "Hyacinth" paid off on the 1st inst. at Devonport. The first-class battle-ship "Renown," with T.R.H. the Duke and Duchess

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of Connaught on board, arrived on the 27th ult. at Portsmouth; the "Renown" left on the 13th inst. to re-join the Mediterranean Squadron. The second-class cruiser "Phaeton" arrived at Plymouth on the 31st ult. from the Pacific; she will pay off at Devonport. Four battle-ships of the Channel Squadron, under the command of Rear-Admiral the Hon. A. Curzon Howe, C.B., C.V.O., C.M.G., viz., the "Magnificent," "Mars," "Prince George," and "Jupiter," have proceeded to Algiers to salute President Loubet on his approaching visit to Algeria, where they arrived on the morning of the 14th inst.

Float-out of "Clio."—The new sloop "Clio," whose keel-plate was laid on 11th March, 1902, was floated out on the 14th ult., at Sheerness. The "Clio" is the fifth sloop of the "Espiegle" type built at Sheerness Dockyard, and her dimensions are as follows:—Length, 185 feet; beam, 33 feet; mean load draught, 11 feet 3 inches; displacement, 1,070 tons. She will be armed with six 4-inch Q.F. guns, four 3-pounder Q.F. guns, and three 303-inch Maxim guns. Her complement will be 113 officers and men. She will be fitted with engines to develop 1,400-I.H.P., and her boilers will be of the Niclausse water-tube type.

Steam Trials.—The new first-class battle-ship "Cornwallis" has completed her steam trials. The following table gives the results of the trials:

	First trial. ½ I.H.P.	Second trial. ¾ I.H.P.	Third trial. Full power.
Duration	30 hours	30 hours	8 hours
Steam pressure in boilers	20 lbs.	255 lbs.	286 lbs.
Vacuum—starboard engine	26·7 inches	26·1 inches	26·4 inches
Vacuum—port engines	25·8 inches	25·8 inches	25·9 inches
Revolutions—starboard engines	76·0	110·1	120·6
Revolutions—port engines	75·3	112·4	121·8
I.H.P. collective	3,724	13,693	18,238
Coal Consumption, per I.H.P. per hour	1·95 lbs.	2·09 lbs.	1·89 lbs.
Speed of ship, by log	10·9 knots	17·7 knots	18·9 knots.

For four runs on the measured course the speed on the second trial was 17·94 knots, while the speed on the measured course when the engines were working at full power was 18·98 knots.

The new first-class battle-ship "Montague" has also at last successfully completed her full-speed trial, with the following results: Steam in boilers, 275 lbs.; vacuum, starboard 26·5, port 26; revolutions, 124; I.H.P., 18,240; air-pressure, 25 inch; speed, 18·8 knots.

The new first-class cruiser "Essex" is undergoing her trials. The following are the results of her first and second runs:—First: Steam in boilers, 177 lbs.; vacuum, starboard 25·1 inches, port 27·1 inches; revolutions, starboard 81·7, port 81·4; I.H.P., starboard 2,328, port 2,310—total 4,638; speed 14 knots; coal consumption per I.H.P. per hour, 2·03 lbs. At her second trial at three-fourths of her full power the results were: Steam in boilers, 250 lbs.; vacuum, starboard 26·45 inches, port 27·7 inches; revolutions, starboard 121·5, port 120·8; I.H.P., starboard 7,958, port 8,174—total, 16,132; air pressure, 0·3 inch (for the last stage of the trial only); speed, 19·6 knots; coal consumption, 2·17 lbs. per I.H.P. per hour.

Casualties to Men-of-War.—A return of casualties to ships of the Navy, showing the name and class of the ship damaged, the nature of the accident, the number of persons injured, the result of any inquiry that may have been held into the circumstances, and time in dockyard for repairs during the year ended December 31st, 1901, was issued recently as a Parliamentary paper [404]. From this return it appears that during

the period mentioned 52 casualties occurred and 32 inquiries were held, with the result that in 18 cases the officer or other person responsible was cautioned, reprimanded, or otherwise punished, while in the remaining 34 cases no blame was attributable. Out of 43 accidents, 26 were cases of collision and 5 were wrecks, the latter being those of the "Sybille," cruiser, the "Viper," torpedo-boat destroyer, the "Cobra," torpedo-boat destroyer, and the "Flora" and "Active," coastguard tenders. One death was caused by the wreck of the "Sybille"; 2 by the bursting of a boiler in the "Daring" torpedo-boat destroyer; 1 by the bursting of a hose in the "Racer," sloop; 67, including 23 civilians, by the loss of the "Cobra," torpedo-boat destroyer; 3 by the accident to a boat of the "Forth"; 6 by a gun accident on board the "Royal Sovereign"; 20 by the wreck of the "Active," and 2 by the collision between the "Salmon," torpedo-boat destroyer, and the steamship "Cambridge."

As a rule the time during which the vessel was in dockyard hands for repairs is measured by days, in a few cases by weeks, and in 4 only by months. The disablement of the port engine of the "Rocket," torpedo-boat destroyer, kept her in the yard for 7 months, but 5 of these were occupied in waiting for machinery from England. The "Fawn," torpedo-boat destroyer, was 2 months under repair after a collision. The "Daring," torpedo-boat destroyer, was 7 months in hand after her boiler burst. The "Indefatigable" grounded in the river St. Lawrence, and was two-and-a-half months in the dockyard under repair.

The greater number of casualties were of a comparatively trifling character, and were such as are inseparable from the risks essential to the effective handling of the destroyer flotillas.—*Times*, etc.

ADMIRALTY REPORT ON THE COMBINED MANŒUVRES BY THE MEDITERRANEAN, CHANNEL, AND CRUISER SQUADRONS, 1902.

Special Object of the Manœuvres.—The special object in view in drawing up the scheme of the 1902 combined manœuvres was to endeavour to ascertain what risks are involved in keeping such a close watch on a fleet in a defended port as to ensure bringing it to action if it issues therefrom. This object was selected because it is the consideration of these risks, taken in conjunction with the amount of mischief the enemy's fleet is capable of doing while at large, and the relative strength of the two fleets, that must determine the question whether it is better to try to bring an enemy to action in the immediate neighbourhood of his port, or adopt some other line of strategy involving less risk to our own ships, but giving him greater chances of evasion.

Arrangements made for Carrying Out the General Idea.—As it was not possible to devise any scheme of manœuvres that would test more than one method at a time, it was arranged to limit the operations in this instance to a blockade. For that purpose the ships taking part were divided into three fleets, designated "A," "B," and "X" respectively, of which "A" and "B" represented the blockading force, and "X" the blockaded. "A" and "B" were each inferior in fighting power to "X," but superior in combination, and faster. The Mediterranean Commander-in-Chief, Sir Compton Domville, was in command of the whole blockading forces, with "A" fleet under his personal orders, while "B" was under the orders of Vice-Admiral Sir Arthur Wilson. The "X" fleet was by first arrangements to have been under the command of the late Rear-Admiral Watson, but unfortunately just before the manœuvres that

officer contracted the illness which caused his death, and Captain H.S.H. Prince Louis of Battenberg, the senior captain of the Mediterranean fleet, was directed to hoist his broad pennant on board the "Implacable," as Commodore of the second class, to succeed him. The constitution of the fleets is given in Appendix I. In all, 19 first-class battle-ships, 2 armoured cruisers, 20 protected cruisers, 21 torpedo-boat destroyers, and 6 torpedo-boats took part.

With the consent of His Majesty the King of the Hellenes, the harbour of Argostoli, in Cephalonia, was selected as the port in which "X" fleet was to be blockaded, being supposed to represent a first-class fortress, and the object of that fleet was to break out of this shelter and join reinforcements supposed to be either to the eastward of the Island of Kos, or westward of the meridian of Palmas Bay in Sardinia, without being brought to action by either an equal or superior force, or if possible followed, while doing as much damage as they could effect to "A" and "B" before breaking out. The object of "A" and "B" was to prevent the accomplishment of these designs. The duration of hostilities was limited to 10 days, and the following rules were drawn up for guidance:—

Rule 1.—a. The coast line of "X" territory is as follows:—It commences at longitude 16° E. near Cape Spartivento, follows the coast of Italy to the parallel of 39° N. near Cape Colonne, thence to Cape Aterra (Cephalonia) following the coast of Cephalonia to the southward round the Port of Argostoli to Cape Scala, from there to Cape Katakolo, then following the coast line of Morea as far as longitude $22^{\circ} 10'$ E.

All islands off the above coast line of Morea belong to "X." Kos and Palmas belong to "A" and "B." Strovathi Island is neutral, and is not to be used by either side. All else, including Sicily, is neutral.

b. An imaginary coast line is to be drawn, starting from latitude 38° N., longitude 8° E., to latitude 38° N., longitude 9° E., thence to Cape Bon, from there to latitude 36° N., longitude 12° E., thence to Cape San Dimitri. Follow the coast of Gozo to the S.E. across the N.E. end of the Comino Channel and down the north side of Malta to Cape Delimara, thence to latitude 34° N., longitude 15° E., following the parallel of 34° N. to longitude $23^{\circ} 30'$ E., thence to the S.W. point of Crete. Follow the coast line of Crete to Cape Sidero, thence to latitude 34° N., longitude $26^{\circ} 25'$ E., thence to latitude 34° N., longitude $27^{\circ} 30'$ E. Any vessel crossing to the southward of this line or to the northward of the 40° parallel of North latitude is out of action.

c. Argostoli, Navarin, and the south bay of Zante, from a line drawn from Cape Marathia to Cape Ieraki, are to be considered as first-class fortresses belonging to "X." Kos and Palmas are to be considered as first-class fortresses belonging to "A" and "B." Ships approaching within a radius of 8,000 yards of the entrance to any of these ports are liable to be ruled out of action by the umpires. The entrance to the port of Argostoli is to be considered between St. Georgias and St. Nicolaos Points.

Rule 2.—When war is declared all ships are free to leave their ports, except the battle-ships of "X" fleet, which cannot leave Argostoli for 24 hours.

Rule 3.—The object of "X" fleet is to break out and join reinforcements supposed to be either to the eastward of Kos, or to the westward of Palmas, without being brought to action by either an equal or superior force, and if possible without being followed, and also to do as much damage as they can to "A" and "B" fleets before breaking out.

Rule 4.—The operations must be considered as an experiment to obtain correct data as to the chances of evasion on the one side, and of the risks on the other, and not as a question of defeat or victory for either side.

Rule 5.—The manœuvres will cease when "X" fleet reaches the meridian of either Kos or Palmas, or when it has been brought to action by an equal or superior force.

Rule 6.—After the operations have commenced ships can coal only at their proper ports of Argostoli, Palmas, and Kos, or at sea at a distance of more than 3 miles from any neutral territory.

Rule 7.—No use is to be made of neutral ports except as follows :—

- a. They may be used for sending and receiving information by telegraph.
- b. Colliers may be stationed at them to await orders.
- c. Vessels of war may anchor in them, but in this case their arrival must be telegraphed to the head quarters of the enemy.

Rule 8.—If vessels belonging to opposite sides are in the same neutral port and a vessel on one side leaves, those on the other side cannot leave for 24 hours after.

Rule 9.—If any vessel belonging to "A" or "B" fleets has to go to Malta she will be put out of action altogether, unless she has enough coal on board to take her to Palmas. If she has this amount of coal on board on arrival she may complete with coal less the amount required to steam from Palmas to Malta. She may also carry out any necessary repairs, but after all work is completed she must remain for 60 hours, to represent the time that would be required to steam to Palmas and back.

Rule 10.—Ships out of action, or awaiting the decision of the umpires, on both sides, are to proceed to Kalamata, Suda Bay, or Malta, whichever is nearest, and await orders from the Commander-in-Chief.

As the risk involved in allowing both sides to manœuvre at night without lights outside Argostoli was considered to be too great, the ships of "X" fleet (other than destroyers and torpedo-boats) were ordered to carry navigation lights within a radius of 50 miles from the port, and as some compensation they were to be immune from torpedo attack at night within that area.

Narrative of Events.—After some instructive tactical and general exercises off Nauplia, in which all the fleets took part, they separated on September 22nd to complete with coal—"A" remaining at Nauplia, "B" proceeding to Suda Bay, and "X" proceeding direct to Argostoli.

During the forenoon of September 29th, all having reported ready, the Commander-in-Chief despatched a telegram from Nauplia to the senior officers of "B" and "X" fleets at Suda Bay and Argostoli respectively, which announced that war was to be declared at 6 p.m. that evening. Unfortunately the Commadore of "X" fleet did not receive it till 10.45 the following morning. At 6 p.m. accordingly Sir Baldwin Walker, commanding the "A" blockading Cruiser Division, left Nauplia in the cruiser "Andromeda," with the cruisers "Minerva" and "Gladiator" and the battle-ship "Vengeance" (all belonging to "A" fleet) in company, steaming 15 knots for Argostoli. The "A" destroyers had preceded him at 17 knots, as it was possible that some of the "X" destroyers and torpedo-boats might attack the "A" fleet while passing through the Cerigo Channel. At midnight all lights were extinguished, and the "Minerva" was sent on under orders to be off Navarin at day-

light, in order to cut off any "X" destroyers that might be making for that port, and reconnoitre the anchorage if possible.

The remainder of "A" fleet left Nauplia at 6.15 p.m. the same evening to take up their blockading station off Argostoli.

The "B" fleet sailed from Suda Bay at 6 p.m. also to commence their blockading duties. Their destroyers were taken in tow by the larger ships, but had to be cast off during the night owing to a rising sea.

At daylight on September 30th the two fleets were in sight of each other off Cape Matapan. Each proceeded independently to its station, the "A" battle-ships arriving at 3 p.m. and the "B" battle-ships, which had further to go, somewhat later. The cruisers got into position later still, and the destroyers last.

The general arrangements for the blockade were as follows:—"A" fleet watched the area eastward of a line drawn S.W. $\frac{1}{4}$ S. from the centre of the entrance to Argostoli Harbour, covering the Zante Channel and Navarin, with an appointed rendezvous in latitude $37^{\circ} 30' N.$, longitude $20^{\circ} 25' E.$

"B" fleet watched the area westward of this line, with a rendezvous in latitude $37^{\circ} 30' N.$, longitude $19^{\circ} 51' E.$

The destroyers of "A" and "B" on alternate nights took the duty of forming the inshore watch close off the harbour's mouth, and on other nights those of "A" fleet occupied the Zante Channel with orders to attack the "X" fleet if they passed the 50-mile immune limit, and those of the "B" fleet were disposed as their Admiral thought desirable.

The "A" and "B" cruisers were assigned positions outside their destroyers but inside their battle-ships, so arranged that they formed a screen between the latter and the hostile destroyers. As the "A" cruisers were all unarmoured ships they were supported on alternate nights by the battle-ships "Canopus" and "Vengeance."

The rendezvous chosen for "A" fleet was in such a position that it could cut off "X" if the latter passed to the eastward, and was about the same distance if they passed to the westward as the harbour's mouth was from Cape Spartivento. At the same time it was sufficiently far from the fortified "X" ports at Zante and Navarin to make it somewhat difficult for "X" destroyers to operate against the "A" ships from those points. "B" fleet's rendezvous was about 30 miles to the westward of this.

By daylight the blockading fleets moved in off Argostoli, and the respective flag officers conferred with each other. At these times the ships were plainly visible from the blockade harbour. Claims arising out of the previous night's operations were considered, and when necessary telegraphed through a neutral station at Zante to an officer inside Argostoli representing the Commodore of "X" fleet. A representative was necessary as a means of concealing from the blockaders the knowledge as to whether "X" fleet was still inside or not.

Coaling was successfully carried out from time to time by the blockading cruisers and destroyers from colliers or battle-ships at the sea rendezvous.

All lights in the blockading fleet were extinguished at night. Steam for 16 knots was always kept ready at 40 minutes' notice, and the whole blockading plan was dependent upon a rapid transmission of the intelligence of an escape of "X" by the watching cruisers and destroyers of "A" and "B."

As regards "X" fleet, the Commodore acted on the assumption that as he was supposed to represent the officer commanding a fleet, whose

principal object was to effect a junction with another fleet at a pre-arranged time on a sea rendezvous, it would be necessary for him to fix exactly beforehand his time and direction of escape, if he was really to reproduce the conditions of war, and that having settled these matters no subsequent events or circumstances should change or influence them. He also decided that before being able to attempt to break away from a closely invested port with any chance of success, it would be necessary to allow a certain time to elapse, for the double purpose of weakening the enemy morally and physically, and of locating his forces. He therefore fixed his hour of departure for 8 p.m. on October 4th, and having come to the conclusion that for certain reasons such a course would add to the realism of the whole manœuvres, chose his western goal at Palmas Bay as the point for which to steer.

On receiving intimation on September 30th of the declaration of war, "X" fleet moved up to the S.E. arm of the harbour and moored at 1½ cables intervals, close to the town of Argostoli, where they were entirely concealed from the ships outside. A signal station was established on the hill (320 feet high) overlooking the approaches to the harbour, and connected, as well as the Argostoli telegraph office, to the "Implacable" by telephone, the latter of these for the purpose of transmitting reports received a cable from Zante signal station. The "Pyramus" was despatched to land the party detailed to establish the latter station with orders to explain, if interfered with, that the time lost in receiving the telegram declaring war accounted for the delay in taking this step. A coast guard of 28 officers and 350 men, with necessary equipment, were landed to patrol the whole sea front of "X" territory in Cephalonia, from Cape Aterra to Cape Scala, and the "Aboukir" piquetted the road on the N.E. side of the harbour overlooking the war anchorage. These arrangements prevented the blockaders from landing spies to ascertain if the defenders were still in the harbour.

At 6.30 p.m. on September 30th, the first night of the blockade, the "X" destroyers and torpedo-boats went out to reconnoitre, and the "X" cruiser "Pyramus" anchored in Vardiani Channel in support. The destroyers worked north, and five of them were attacked by the "B" destroyer "Chamois," which mistook them in the dark for torpedo-boats and then retreated. Later on, the "B" destroyers "Chamois" and "Myrmidon" engaged the "X" destroyers "Cynthia" and "Ariel" within range of the shore defences. The "B" cruiser "Doris," which had also got within range of the batteries, encountered the "X" destroyer "Coquette," and fired on her.

The "X" torpedo-boats worked to the southward. Nos. 92 and 93 were attacked by the "B" destroyer "Ardent," and ran in under the land, defending themselves.

The results of all these skirmishes, however, were not sufficiently clear at the time to allow of summary adjudication, and neither side suffered immediate loss in consequence. After the manœuvres the umpires decided that the "B" destroyers "Ardent," "Chamois," and "Myrmidon," and the "X" torpedo-boats 92 and 93 would have been out of action as the result of the night's work.

Early on the morning of October 1st the "A" cruiser flag-ship "Andromeda," while lying off Zante, sighted lights to the S.E., which were at first taken to be "X" cruisers, but subsequently proved to be an Italian fleet steering to the westward. Later in the day the "B" cruiser "Brilliant" mistook them for "X" battle-ships, and reported the same by signal before discovering her error.

At daylight the "B" cruiser "Prometheus" was despatched to bring in three colliers waiting at a rendezvous, and with the other "B" cruisers "Brilliant" and "Pactolus" ordered to coal from them. The "B" destroyers were coaled from their battle-ships and the cruiser "Niobe."

During the day the "A" battle fleet, accompanied by the cruiser "Minerva," reconnoitred the south and east coasts of Zante, returning to their rendezvous when this service was performed.

At nightfall the "A" destroyers took the inshore watch off Argostoli, the "B" destroyers being given positions just outside the 50-mile limit, with orders to endeavour to attack the "X" fleet if they came out.

At 8 p.m. the six "X" cruisers went out for a night's reconnaissance, with orders not to go beyond the 8,000 yards' limit, which was supposed to represent the range of the shore defences. The "Pyramus" and "Pioneer" sighted the "A" destroyer "Mallard" and another which was not identified, and opened fire on them, whereupon they retreated. Subsequently the "A" destroyer "Orwell" and two others not identified were sighted and driven off by the "X" cruisers.

At 8.30 p.m. steamboats from the "X" battle-ships, armed with dropping gear and torpedoes set for four feet depth, were sent out to reconnoitre several lights sighted close into the bay. The lights had disappeared by the time the boats got out, but at 10.30 p.m. the "Illustrious" steam pinnace found a destroyer, which proved to be the "Mallard," close in under the land, and, approaching her without being observed, torpedoed her at 50 yards range.

The same evening the collier "Rowtor," disguised as a German steamer by "X" fleet, left the harbour with an officer and signalman from the fleet on board, and "X" torpedo-boat 92 lashed her along her starboard side. She steamed about 40 or 50 miles to the W.N.W., and first passed a four-funnelled and a double-funnelled cruiser in company, at which the torpedo-boat was slipped. Too much time was lost in this, however, so the attack was not made, and the boat returned alongside the collier. The "Rowtor" then steamed to the southward, and shortly afterwards sighted the "B" cruiser "Sutlej," and another cruiser apparently of the "P" Class. The torpedo-boat was again slipped and attacked. She was sighted from the "Sutlej" and fired on for three minutes before discharging her torpedo, both cruisers steaming off at full speed, but the torpedo struck the "Sutlej" and torpedo-boat 92 returned to the harbour, where she arrived at 9.45 a.m. next day, after being sighted by the "A" cruiser "Andromeda," which unsuccessfully tried to cut her off. The "Rowtor" proceeded to Navarin, to which place she had been ordered, and despatched a telegram thence to the Commodore of "X" fleet, reporting all that she had observed of the dispositions of "A" and "B." She then left Navarin to return by a circuitous route to Argostoli. It is instructive to note that the telegram did not reach its destination till after "X" fleet had sailed, more than two days subsequently.

As before, the difficulty of deciding on the results of these night encounters was such that no ship was put out of action at the time. Subsequently the umpires decided that the "A" destroyer "Mallard" had been put out of action, and the disguised collier "Rowtor," with her torpedo-boat, captured.

No incidents of importance occurred during daylight of October 2nd. At night-fall it was the turn of the "B" destroyers to take the inshore watch, but before they had arrived on the scene the "X" torpedo-boats,

had slipped out of the harbour, whence they steamed about 50 miles to the S.S.W. At that point the divisions separated, steering N.E. and N.E. by E. respectively, in search of the "A" battle-ships. These they failed to find, but torpedo-boat 91 discovered the "A" cruiser "Pegasus" at 12.45 and torpedoed her. At 1.15 a.m. torpedo-boat 95 also found the "Pegasus," and torpedoed her. These appear to have been the most indisputably successful torpedo attacks of the manœuvres, and the "A" cruiser Admiral reported that the "Pegasus" was undoubtedly torpedoed.

The "X" destroyers also went out after dark; the "Banshee" and "Foam" standing to the northward, and the "Coquette," "Cygnet," "Cynthia," "Ariel," and "Albatross" towards Zante. The "Banshee" and "Foam" first fell in with the "B" destroyer "Myrmidon" and forced her to retreat. After that the "Foam" encountered the "B" destroyer "Flying Fish." These two fought for the regulation time; and then, both being out of action, proceeded into Argostoli. The "Coquette," "Cynthia," "Cygnet," "Ariel," and "Albatross" found and attacked the "A" cruiser "Minerva" in the Zante Channel, where she was in position as the easternmost ship of the cruiser cordon. She allowed herself out of action, and proceeded into Zante. Later in the evening the "X" destroyer "Ariel" was mistaken by the "B" destroyer "Desperate" for a torpedo-boat, and followed in till within range of the forts, whereupon the latter was captured and went into Argostoli.

Before daylight on the 3rd, the "X" destroyers and torpedo-boats returned as usual into harbour. As the result of the night's fighting the Commander-in-Chief decided, on the 3rd, that the destroyers "Coquette," "Cygnet," and two others, the torpedo-boats 92, 93, and 94, and the "Hood's" piquet boat, were out of action on the "X" side, and he ordered the "B" destroyers "Flying Fish" and "Desperate" to remain out of action pending the decision of other claims. These two had already gone into Argostoli as out of action. Subsequently, some of these verdicts were reversed by the umpires, who gave as the results of the night's work the "A" cruiser "Pegasus," the "B" destroyers "Flying Fish" and "Desperate," and the "X" torpedo-boat 91, as being the vessels put out of action.

The "A" battle-ship "Canopus" reported that she had been shadowed by two vessels all night, which afterwards proved to be a pair of colliers belonging to "B" fleet.

Nothing of importance occurred during daylight on the 3rd. The blockading fleets closed the shore as usual, and some of the cruisers were detached to coal from the colliers, and the battle-ship "Irresistible," at the "A" sea rendezvous.

After dark the "A" destroyers took up their station on the inshore watch, and the "B" destroyers formed a line across the Zante Channel in advance of the "A" cruisers "Minerva" and "Gladiator."

The "X" destroyers (except the "Banshee," which was out of action) went out at 7 p.m. with torpedoes set for 4 feet depth, under orders to try and catch the blockading destroyers lying off the harbour's mouth by getting outside them and closing in. The "Coquette," "Cygnet," and "Ariel" steamed to the westward, and at 9.30 sighted the "A" destroyer "Panther" off Vardiani Light and gave chase. The "Foam," "Albatross," and "Cynthia," went eastward and fell in with the "A" destroyers "Earnest," "Locust," and "Orwell." After an engagement lasting for half an hour the "Locust" admitted being put out of action and went into Argostoli. The others made off. The "Illustrious"

piquet boat went out to a position off Vardiani, where she claimed to have surprised and torpedoed a destroyer which was not identified.

At 4.30 a.m. on the 4th, the "X" cruisers "Pyramus" and "Pioneer" dashed out in the hopes of surprising any blockading destroyers that might be about, but found none and returned to harbour. The umpires decided that the only result of the engagements on the night of the 3rd was the "A" destroyer "Panther" out of action.

By October 4th the blockade had reached its fifth day, and the time at the disposal of the "X" fleet was beginning to get short if they were to succeed in reaching either of their alternative destinations within the period allowed, and the Admirals commanding the blockading forces, after their conference on the 4th, came to the conclusion that it was probable that the attempt to break the blockade would be made that night, in which they proved to be correct. The "B" cruisers were moved 9 miles closer in, as the risk from the enemy's torpedo craft had been lessened by the number put out of action, and the "A" battle-ships, instead of going to their usual night position, moved up behind their line of cruisers.

During the day the "A" cruisers carefully reconnoitred the harbour entrance and the other "X" positions. Before evening some slight modifications were made in their stations for the night.

It has been already stated that the Commodore commanding "X" fleet had decided that to give the manœuvres the nearest semblance to the actual conditions of war, it would be necessary for him to fix exactly both the hour and the direction of his escape, which could not be influenced by changing circumstances, as it was supposed to be his ultimate object to effect a junction at a pre-arranged time and place with another fleet. With this idea in view, he fixed his time of departure at 8 p.m. on the 4th, and made his arrangements accordingly. During the day his ships prepared for sea, and all men on duty ashore were re-embarked. Fires had been lit in all boilers on the night of the 3rd, and banked to avoid smoke showing in the day-time. The telephone wires from the signal station and telegraphic office were transferred from the "Implacable" to the store ship "Tyne," which was remaining behind, and communication thus maintained right up to the hour of departure.

At 1 p.m. the warrant officer of "X" fleet in charge at the telegraph office arrested a man handing in a suspicious telegram for Zante, which was the neutral telegraph office used by the blockaders. He was searched to his boots, but nothing incriminating was found, and he ultimately proved to be the Maltese clerk of a salvage steamer wiring on private business.

At 4 p.m. the disguised collier "Rowtor," which had gone out on the night of the 1st, returned and made her report. She had been to Navarin and back, and passed through the "A" battle-ship fleet at their rendezvous that same morning. On her return to Argostoli her disguise deceived the officer of the guard of her own fleet who addressed the master in German when he boarded her.

Shortly before dark the "X" destroyers "Coquette," "Cygnet," "Ariel," "Cynthia," and "Foam," were sent out to search the coast for five miles round the harbour's mouth for any of the blockading torpedo craft, which they were to drive off until the "X" battle-ships had had time to get well out of the harbour. After this they were to proceed W. by N. to clear the way for the battle squadron by attacking the "B" fleet, or any other hostile ships found in the line of advance. The "Ariel" was to fasten on to the tail of "B" fleet, and fire Very's lights and rockets at intervals to indicate to the "X" fleet where they were.

On leaving the harbour at 6 p.m. these destroyers first found the "B" cruiser "Niobe" close to the 8,000 yards limit south of Vardiani. The "Niobe" steamed seaward, and no engagement took place. The destroyers then stood on to the westward, and next fell in with the "B" destroyers "Chamois," "Flying Fish," and "Fawn." The "Fawn" was captured and went into Argostoli and the other two were driven off. The "Ariel" then separated from her consorts and steered for what she believed to be approximately the "B" fleet night position, eventually discovering that fleet a few miles to the eastward of it at 2 a.m. Arriving there, she commenced firing lights and rockets as by the orders given above, which she kept up for an hour. She then endeavoured to get back to Argostoli in accordance with the orders issued to all the "X" destroyers, but was captured off the port by the "B" cruiser "Brilliant," and put out of action.

The "Coquette," "Cygnet," "Cynthia," and "Foam," having driven off the watching destroyers at the harbour entrance for the time, stood out westward to clear the way for the escape of the battle-ships. The "Foam" encountered and (in the estimation of the umpires) successfully torpedoed the "B" cruiser "Doris," which did not fire a shot until she was within 75 yards. The "Doris" went into Argostoli as out of action. The other three fell in with various ships of the blockading fleets which there was not time to identify, but which were probably the "St. George," "Niobe," "Formidable," "Hannibal," and "Hermione," as all these ships afterwards reported having seen and fired on destroyers during the night. These three and the "Foam" reached Argostoli in safety again at daylight.

The "X" destroyer "Albatross," accompanied by torpedo-boats 91 and 92, left Argostoli at 6 p.m. also, under orders to search the coast five miles east of the harbour and then return to take station if possible two miles ahead of the escaping battle squadron, for the purpose of leading away any blockading destroyers that the other "X" destroyers might have missed. These orders were carried out, and they returned to Argostoli safely at daylight.

At 7.30 p.m. the "X" cruisers steamed out. They were under orders to stand to the south-eastward right through the Zante Channel with the object of deceiving the blockaders into the belief that they were the "X" battle squadron endeavouring to make for the eastern objective at Kos. To further the deception they carried double sets of navigation lights, one set in the usual place, and the other right aft but facing forward in the same direction, and they were ordered, on arrival at latitude $37^{\circ} 26' N.$, longitude $21^{\circ} 10' E.$, to fire six minute guns each after the "Aboukir" had fired three rockets, as it was considered probable by the "X" Commodore that the blockaders would use some rocket signal to indicate battle-ships escaping. By a curious coincidence three rockets happened to be the very signal that had been arranged, and the deception was to some extent successful, inasmuch as it drew several of the "A" cruisers to the S.E. to investigate. On leaving the harbour the "X" cruisers were preceded by torpedo-boats 93, 94, 95, and 96, to clear the way for them, and on passing the 50-mile limit they extinguished their lights.

They got away by 7.45 p.m. and shaped course as ordered. They were first sighted by the "B" destroyer "Chamois," stationed near Vardiani light, which recognised them as cruisers and remained at her post. They were then observed by the "B" destroyer "Myrmidon" at 9.30 p.m. Her commanding officer was taken in by the double lights, and at once steamed out to the westward, signalling to the "B" cruisers "eight

battle-ships and four cruisers standing S.E." This signal was observed by the "Niobe," and she endeavoured to pass it on, but being a "B" cruiser, and therefore belonging to the squadron whose particular duties lay to the westward of the dividing line, she remained at her station, expecting that if there was to be a chase to the S.E. she would receive a signal from the "B" Admiral to that effect.

As the "X" cruisers approached the Zante Channel they were observed at 9.30 p.m. by the "A" cruisers "Gladiator" and "Pegasus," and the "A" destroyers in the channel. The "Gladiator" followed them until satisfied that they were cruisers and not battle-ships, and then, feeling confident that the latter would not go in the same direction, steamed off to inform the "A" cruiser Admiral, but struck the cruiser line too far north, and failing to find him returned to her station.

The commanding officer of the "Pegasus," on the other hand, thought the escaping ships were battle-ships, and followed them up, flashing the prearranged signal to that effect in the direction of the Admiral, as it was found impossible to get any signals through by wireless telegraphy, which was being completely blocked by the escaping ships. All these signals were, of course, seen by the "X" vessels as well as by their enemy for whom they were intended.

The "A" destroyers followed up unobserved, also under the impression that they were after the "X" battle squadron, with the intention of attacking them when outside the 50-mile immune limit, and detached the "Griffon" to make the prearranged rocket signal indicating escaping battle-ships, or convey the information to the proper destination by any means she could. At 11.15 p.m., however, shortly before the 50-mile limit had been reached, the "Aboukir" fired three rockets as a false signal agreeably to her orders, and her consorts fired their minute guns, whereupon the chasing destroyers, thinking they were observed and fired on, disclosed their presence by Very's lights. Shortly afterwards, discovering that they were following cruisers and not battle-ships, they gave up the pursuit and stood back towards Argostoli again.

The signals from the "Pegasus" and "Griffon" were observed from the "A" cruiser flag-ship "Andromeda," which immediately proceeded, in company with the "A" cruiser "Pandora," to investigate matters to the south-eastward. While standing in that direction they met the "A" destroyer "Orwell," which, as above stated, had given up chasing the escaping vessels on discovering they were cruisers. The "Orwell" reported the true facts of the case, but as the "Pegasus" continued to follow the "X" cruisers and flash the signal for battle-ships the Admiral decided that he was bound to verify these signals. He therefore first despatched the "Orwell" to convey to the Commander-in-Chief such information as he had, and then shaped a course at full speed by which he knew he must cut off the "X" battle squadron if they were steering to round Cape Matapan. This led to no result, as there were neither battle-ships nor cruisers in that direction, for the "X" cruisers, on getting rid of the destroyers and reaching a prearranged point, had altered course to the westward and dispersed, with lights extinguished, to make the best of their way independently at full speed for their objective rendezvous west of the meridian of Palmas Bay. Here they all arrived in safety by 6 p.m. on October 6th, within an hour of their own battle squadron, and about 46 hours after breaking out, except the "Diana," which was somewhat later.

Finding no signs of "X" ships of any kind to the S.E. the "Andromeda" and "Pandora" eventually altered course to the northward again

for Argostoli, off which they arrived next morning, and learnt from the ship left behind for that purpose that the "X" battle-ships had escaped during the night and gone west. Admiral Walker at once started in pursuit, and tracing the direction of the chase by the smoke of the long line of vessels ahead of him, overtook the "A" and "B" battle squadrons and arrived off Palmas Bay at 7 p.m. on the 6th, about an hour after the last of the "X" ships, except the "Diana" and "Juno," which he passed.

Of the remaining "A" cruisers the "Naiad," "Hermione," and "Minerva," joined the "A" battle fleet in the morning when the latter started westward in pursuit as described hereafter. The "Pegasus," having continued to chase the "X" cruisers in the belief that they were battle-ships, discovered her error at 2 a.m. and returned to the "A" rendezvous in time to join her battle squadron in the chase also. The "Rainbow" observed the false rocket signals made by the "X" cruiser "Aboukir," and heard the guns of the "Aboukir's" consorts, and her commanding officer was deceived into repeating the rocket signals and leaving his station without orders to ascertain what was going on to the south-eastward, where he remained until daylight. Returning next morning to the rendezvous he heard that "X" fleet had escaped westward followed by "A" and "B," and started to catch up the latter, which he did on the night of the 6th. Had the "Rainbow" not thus left her patrol, it is probable that the "Gladiator's" efforts to find the "Andromeda" and give information that the vessels escaping to the south-east were cruisers would have been successful, in which case the "A" cruiser Admiral would not have been drawn off on a false scent. The "Gladiator," "Furious," and "Pandora" were short of coal, and could take no part in the chase.

The "X" battle-ships weighed at 7.50 p.m. to make their escape. The night was the darkest experienced during the whole manœuvres, and while the squadron was turning together 16 points to head outwards the "Hood" gathered stern way, and the space being very limited, touched bottom with her rudder, thereby fracturing the rudder head. She was therefore left behind, and subsequently safely navigated, first to Malta, and then to England, by her twin propellers only. The accident delayed the other ships for 20 minutes, so that they did not cross the line marking the entrance to the port till 9.30 p.m., whence they shaped course for Cape Spartivento at 15 knots speed. Their destroyers had already gone westward to clear the way for them, with the exception of the "Albatross," which, with torpedo-boats 91 and 92, took up station two miles ahead of them to lead away any hostile ships the others might have missed. The delay caused by the "Hood's" mishap enabled the "B" destroyer "Chamois" to get back unobserved to the harbour entrance again in time to witness the battle-ships escape, and make sure of the direction in which they were standing. Having ascertained this, her commanding officer at once started off to inform the "A" battle fleet, but, as previously mentioned, Admiral Domvile had left his usual position to keep closer station on his cruisers for the night, and the "Chamois" failed to find him. She fell in, however, with the "A" destroyers "Boxer" and "Griffon," which had come from the Zante Channel on a similar quest, to give information of the escape of the "X" cruisers to the south-east. The three destroyers having exchanged intelligence separated to continue the search for "A" battle squadron, an employment which lasted them for the remainder of the night, and gave the "X" battle-ships a start which greatly increased their chances of success.

At 11.30 p.m. the "St. George," stationed in the centre of the "B" cruiser cordon sighted the escaping battle squadron, and her commanding officer, having satisfied himself of their identity, signalled the same to the "B" cruiser "Pactolus," the next ship in the line towards the "B" battle fleet. As the escaping ships were successfully obstructing all wireless telegraph work it was necessary for the watching cruisers and destroyers to depend entirely upon visual signalling for the transmission of their reports. In this also, however, they encountered great difficulty, for the "X" cruisers and destroyers were firing guns and rockets and flashing search-lights in all directions in order to mislead and confuse. After some loss of time the "Pactolus" passed the "St. George's" signal on to the "Brilliant," and the "Brilliant" endeavoured to pass it to the "Furious," the nearest cruiser in the line to the battle fleet. In this, however, she failed.

It was not till 2 a.m. that the commanding officer of the "St. George" ascertained from the "Brilliant," that the "B" Admiral had not received the signal, and he then stood towards the "B" fleet's night position, to endeavour to get in touch with the Admiral himself. His search-light was seen from the "B" flag-ship, but as search-lights were at work and rockets and guns were being fired in all directions, the signalling from the "St. George" was misunderstood, and thought to be a device of the enemy. It was not, therefore, answered. Failing to elicit an answer from the direction of the battle squadron, the commanding officer of the "St. George" thought that they must have already started in pursuit, and accordingly started himself at full speed. Further time was thus lost, and it was not until 7 a.m., about 10 hours after "X" fleet had cleared the harbour, that the "Brilliant" got into communication with the "B" fleet and announced their escape.

When the "B" fleet received the news, the "A" fleet happened to be in sight approaching from the southward. Information was immediately conveyed to the "A" flag-ship both by wireless telegram and the despatch of the destroyer "Chamois," but it turned out that they had already received the news through other sources.

The "A" battle squadron, as already mentioned, had closed on their screening cruisers for the night of the 4th, and were consequently some distance from their usual night position. When the "B" destroyer "Chamois" and the "A" destroyers "Boxer" and "Griffon" arrived there, each bearing important intelligence, they consequently failed to find anyone to whom to deliver it. They, therefore, exchanged information and parted again at once to continue their search.

In the meanwhile the "A" destroyer "Orwell" had also been looking for the Commander-in-Chief, having, as previously stated, been despatched by the "A" cruiser Admiral in the "Andromeda" to convey the news of the "X" cruisers' escape to the south-eastward. At 5.30 a.m. on the 5th, the "Orwell" found the "A" flag-ship "Bulwark," and imparted her information, which was the first intimation the Commander-in-Chief had that any of the "X" ships whatever had escaped. Less than half-an-hour afterwards the "Boxer" also found the flag-ship and signalled the news that the "X" battle squadron had broken out during the night and gone westward, which she had learned from the "Chamois" on interchanging notes at the rendezvous. It was now 6 a.m., and the "X" battle-ships had got a start of 9 hours in the chase. The "A" vessels immediately raised steam for full speed and steamed north to get first into touch with the "B" battle squadron, which was effected by 7 o'clock. Both fleets then started straight for Palmas Bay in pursuit.

The "A" battle-ships were the faster, and steaming 17 knots the Commander-in-Chief calculated that he could overtake "X" fleet by the morning of the 6th. He would have engaged "X" with an inferior force, as by the rules, although thereby suffering the loss of ships himself, he would have reduced his adversary's speed to 10 knots, and he hoped that this would give the "B" fleet time to come up and establish a superiority of strength. He found, however, next day that two of his ships were beginning to experience difficulty in maintaining 17 knots speed for so long, and the "Irresistible" ultimately had a breakdown. He consequently gave up hopes of overtaking his enemy, and eased down to await the "B" squadron which was following.

The "B" squadron at a speed of 14½ knots came up with him at 6 p.m. on the 6th, and the combined fleets anchored in Palmas Bay at 8 a.m. on the 7th.

The "X" battle squadron, after getting clear of the blockading cruisers, experienced no further interference from their adversaries, but the "Implacable" was accidentally torpedoed by one of the destroyers of her own fleet, owing to a subordinate losing his head and mistaking her for one of the enemy's ships. As this happened within the 50-mile immune zone, however, no notice was taken of the occurrence, and it is most unlikely that it would have happened in war, for the destroyer, which was in sight long before she attacked, would have been fired on without waiting to ascertain whether she was friend or foe. A speed of 15 knots was maintained for four hours, but the "Repulse" had difficulty in keeping this up, and the Commodore eventually reduced to 13. On approaching the Straits of Messina the "Victorious," "Cæsar," and "Illustrious," were sent on at 15½ knots, and at the same time the "Renown" took up station 3 miles astern of the "Repulse," and the Commodore in the "Implacable" stationed himself 3 miles astern of the "Renown." The object of this arrangement was to give the "Repulse" sufficient warning to enable her to get out of sight to the northward in the event of the "A" or "B" fleets coming up. During the night of the 5th the ships kept well clear of the Sicilian coast to avoid the destroyers which it was expected would be in chase, and at 6 a.m. on the 6th the "B" cruisers "St. George" and "Sutlej," which were leading the pursuit, were sighted astern. By 5 o'clock the same evening all the "X" battle-ships had passed the meridian of Palmas Bay, and so successfully effected their object. The "X" cruisers "Vindictive" and "Pyramus" were already there, and the remaining "X" cruisers arrived before 6 p.m., except the "Diana," which had been obliged to ease down, and did not reach her destination till later.

The first ship of the chasing fleets to arrive was the cruiser "St. George," which passed the meridian of the bay at 5.30 p.m. ahead of some of the escaping ships. As already stated, the "A" and "B" battle squadrons arrived in company at 8 a.m. the following morning.

The manœuvres were thus brought to a conclusion by the success of "X" fleet in attaining their object within the given time limits, and the fleets dispersed during the next two days for various destinations in accordance with previous orders.

The total losses during the operations were estimated by the umpires as follows:—

"A" Fleet.—Cruiser "Pegasus," destroyers "Mallard" and "Panther."

"B" Fleet.—Cruiser "Doris," destroyers "Ardent," "Chamois," "Desperate," "Fawn," "Flying Fish," and "Myrmidon."

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"X" Fleet.—Destroyers "Ariel" and "Banshee." Torpedo-boats 91, 92, and 93. Disguised collier "Rowtor."

In addition to the above the sea-going strength of "X" fleet was diminished by one battle-ship, the "Hood," owing to an accident, and that of the "A" fleet also by one battle-ship, the "Irresistible," owing to a breakdown.

APPENDIX I.

Composition of the Fleets.

	"A" FLEET.	"B" FLEET.	"X" FLEET. ¹
<i>Battle-ships.</i>	Bulwark (flag).	Majestic (flag).	Implacable (broad pendt.)
	Formidable.	Jupiter.	Illustrious.
	London.	Hannibal.	Hood.
	Canopus.	Magnificent (2nd flag).	Victorious.
	Irresistible.	Mars.	Cæsar.
	Vengeance.	Prince George.	Repulse.
			Renown.
<i>Cruisers.</i>	<i>1st Class.</i>	<i>1st Class.</i>	<i>1st Class.</i>
	Andromeda (flag).	St. George (broad pendt.).	Aboukir (<i>armoured</i>).
		Sutlej (<i>armoured</i>).	
		Niobe.	
	<i>2nd Class.</i>	<i>2nd Class.</i>	<i>2nd Class.</i>
	Gladiator.	Brilliant.	Vindictive.
	Naiad.	Doris.	Diana.
	Hermione.	Furious.	Juno.
	Minerva.		
	Rainbow.		
<i>Torpedo-Boat Destroyers.</i>	<i>3rd Class.</i>	<i>3rd Class.</i>	<i>3rd Class.</i>
	Pegasus.	Pactolus.	Pyramus.
	Pandora.	Prometheus.	Pioneer.
	Orwell.	Myrmidon.	Coquette.
	Griffon.	Chamois.	Cygnets.
	Panther.	Flying Fish.	Ariel.
	Locust.	Kangaroo.	Albatross.
	Boxer.	Desperate.	Cynthia.
	Earnest.	Fawn.	Foam.
	Mallard.	Ardent.	Banshee.
			Six torpedo-boats.
			Tyne (depôt-ship)

APPENDIX II.

Instructions for Umpires.

1. The senior officer present will always act as umpire during the operations, and decide on the spot which ships are out of action or should have their speed reduced in accordance with Rule 9, reporting the cases to the Commander-in-Chief.

2. Any matter or claim not specially provided for by the rules is to be dealt with by the umpire on its own merits.

3. In sending in claims the form ordered is to be used, a separate form being employed for each claim. These forms are applicable to all ships including destroyers and torpedo-boats. The results of fleet actions

¹ The battle-ship "Ramillies," detained at Malta by the illness of Rear-Admiral Watson, was supposed to be with "X" fleet, the strength of which for tactical purposes was therefore considered to include eight battle-ships.

are to be plotted as ordered by Commander-in-Chief's memorandum of 13th September, 1902.

4. Every ship and torpedo-boat is to send in a concise account of proceedings, giving actual times of any occurrence bearing on the operations, and in addition the captain is to forward any claim to which he considers his ship entitled. These are to be sent in to the umpire at the earliest opportunity.

5. Umpires' reports and claim forms are to be sent to the Commander-in-Chief at the earliest possible opportunity after the operations.

6. All ship and torpedo attacks made or guns fired are to be reported. If by mischance a friend has been engaged the fact is not to be suppressed.

7. Colliers are liable to capture except in neutral waters, but great discretion is to be used by commanding officers in carrying out this rule.

8. Table for calculating the fighting value of ships :—

	100 points Battle-ship.																	
	Effective range	Time																
	Miles	Mins	60 points Armoured Cruiser.															
Battle-ship ...	3	35	Effective range	Time														
	Miles	Mins	Miles	Mins	40 points 1st Class Cruiser.													
Armoured cruiser ...	3	30	2.5	30	Effective range	Time												
	Miles	Mins	Miles	Mins	18 points 2nd Class Cruiser.													
First-class cruiser ...	3	25	2.5	25	2	25	Effective range	Time										
	Miles	Mins	Miles	Mins	8 points 3rd Class Cruiser.													
Second-class cruiser...	3	20	2.5	20	2	20	2	20	Effective range	Time								
	Miles	Mins	Miles	Mins	5 points Torpedo- Gunboat.													
Third-class cruiser ...	3	15	2.5	15	2	15	2	15	1.5	15	Effective range	Time						
	Miles	Mins	Miles	Mins														
Torpedo-gunboat ...	3	10	2.5	10	2	10	2	10	1.5	10	1.5	10						

NOTE.—a. Should the number of points to be deducted fall halfway between the value in points of any two ships, the ship of the smaller value is to be put out of action.

b. The value of a destroyer is four points, that of a torpedo-boat two points, but their points are not to be considered when calculating the total value of combinations of ships.

9. The following are the rules for fleet actions : —

In order to derive the greatest amount of benefit from these manœuvres, as few ships as possible must be ruled out of action, the number that may be ruled out being arrived at as follows :—

The number of points at which the weaker side is valued is to be deducted from the number of points at which the stronger side is valued, and a ship or ships equal in value to the difference is the maximum to be ruled out from the weaker side, and the equivalent in ships of half this number of the difference in points from the stronger side. Should the number of points to be deducted from the stronger side be less than 100 one battle-ship is to have her speed reduced to 5 knots for 24 hours (but no account is to be taken for points less than 40). After any general action the speed of both fleets is to be reduced to 10 knots for the remainder of the manœuvres.

NOTE.—If there is an armoured cruiser or first-class cruiser present she is to be ruled out of action in accordance with the scale of points instead of penalising a battle-ship.

9a. The following rule is for single ship actions when the two ships engaged are of equal force :—

The speed of both is to be reduced to 10 knots after the engagement for the remainder of the manœuvres. If either of the ships engaged has already had her speed reduced to 10 knots owing to having previously been in action, she is, after the engagement, to be ruled out of action for the remainder of the manœuvres.

10. If in a fleet or cruiser action the difference of strength in points is 3 to 1 or more, the penalty as stated in Clause 9 will not be exacted from the superior force.

11. Ships ruled out of action are to fly "Z" flag at the triatic stay forward, and in addition ships so fitted are to top their main derricks by day, and show navigation lights by night.

12. Rules for destroyers and torpedo-boats attacking ships are as follows :—

a. Torpedoes are to be fired with collision heads when attacking ships, except when acting against ships of the "P" class or smaller vessels, when a red Very's light is to be fired at the moment the torpedo would be discharged. A Very's light is also to be used in lieu of the torpedo if, through fog or heavy sea there is no reasonable chance of recovering the torpedo. When using the Very's light it must be fired within 700 yards of a moving or 1,000 yards of a stationary ship to be considered a successful shot.

Only one torpedo or Very's light is to be fired, the destroyer or torpedo-boat must then return to a base (floating or otherwise) for another torpedo before again making an attack.

b. Destroyers or torpedo-boats when engaging one another are to fire blank at the rate of one round a minute.

- c. A destroyer or torpedo-boat is to be considered out of action if in clear weather by day she is within 3,000 yards of a 2nd class cruiser or larger ship for two minutes or within the same range of a "P" class cruiser for three minutes, and at night if under effective fire within 2,000 yards range for two minutes of any ship.
- d. Torpedoes which strike nets are not to be allowed as successful shots.
- e. Destroyers may approach within 8,000 yards of a fortified port, but are not allowed to cross the entrance line.
- f. Destroyers and torpedo-boats when engaged at night are to make their pendants at the expiration of the attack whether successful or not, and are to place position and navigation lights at once, and then pick up their torpedoes.
- g. Destroyers have to be within an effective range of 1 mile for 10 minutes from each other to decide an engagement.
- h. A destroyer can put a torpedo-boat out of action if she has her under fire within a range of 500 yards for three minutes.

APPENDIX III.

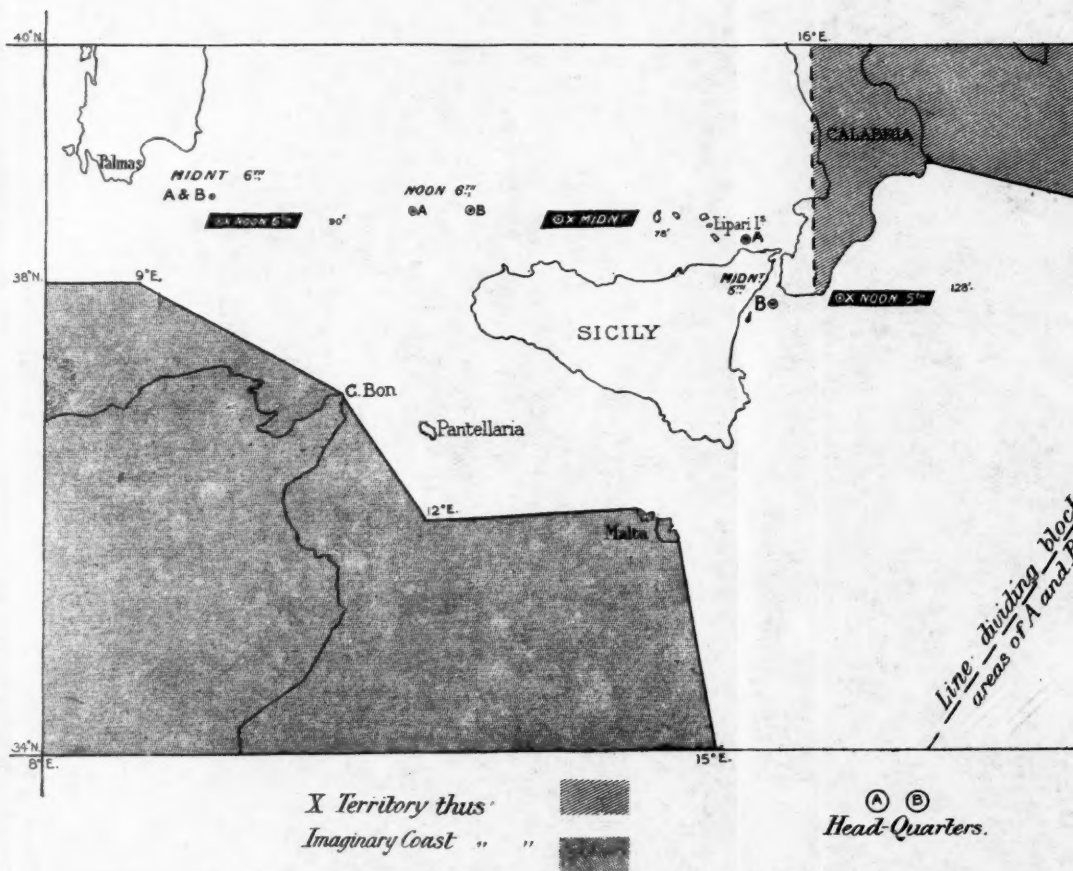
*Umpires' Report.**Claims made during Combined Operations off Argostoli and Decisions thereon.*

No.	Date.	Hour.	Ship Claiming.	Ship Claimed.	Result.	Remarks.
1	30 Sept.	9.34 p.m.	Chamois	Five torpedo-boats.	No result ...	These were not torpedo-boats but destroyers.
2	30 "	10.17 p.m.	Ardent	Nos. 92 and 93 torpedo-boats	Both sides out of action.	Equal forces.
3	30 "	11.1 p.m.	"	One torpedo-boat.	No result ...	Ardent already out of action.
4	1 Oct.	0.28 a.m.	Doris	Destroyer or torpedo-boat.	Claim not established.	No destroyer or torpedo-boat in her vicinity at this time.
5	1 "	5.15 a.m.	Chamois	Three torpedo-boats.	Chamois out of action.	These were destroyers and Chamois was under fire from shore batteries.
		4.28 a.m.	Aboukir (shore battery).	Chamois		
6	1 "	5.20 a.m.	Myrmidon	Two torpedo-boats.	Myrmidon out of action Chamois already out of action.	These were destroyers and Myrmidon was under fire from shore batteries.
		5.18 a.m.	Cynthia and Albatross	Myrmidon and Chamois.		
7	1 "	8.17 p.m.	Pyramus and Pioneer	Mallard	Mallard out of action.	Outside the distance.
8	1 "	10.3 p.m.	Aboukir (shore battery).	Orwell and consort.	Claim not allowed.	
9	1 "	10.20 p.m.	Illustrious steam pinnace	Mallard	No result ...	Mallard already out of action.
10	2 "	3.59 a.m.	Sutlej	Collier and torpedo-boat	Collier captured.	Torpedo-boat already out of action.
		4.0 a.m.	No. 92 torpedo-boat	Sutlej and one cruiser.		
11	2 "	9.5 p.m.	Chamois	Hood's piquet boat.	No result ...	Chamois already out of action.
12	2 "	7.7 p.m.	Minerva	Coquette, Cygnet, Cynthia and three destroyers.	Claims not allowed.	The relative positions and high speeds of these vessels rendered it very improbable that either gun or torpedo fire would be effective.
		7.54 p.m.	Cygnet	Minerva		
		7.57 p.m.	Coquette	Minerva		



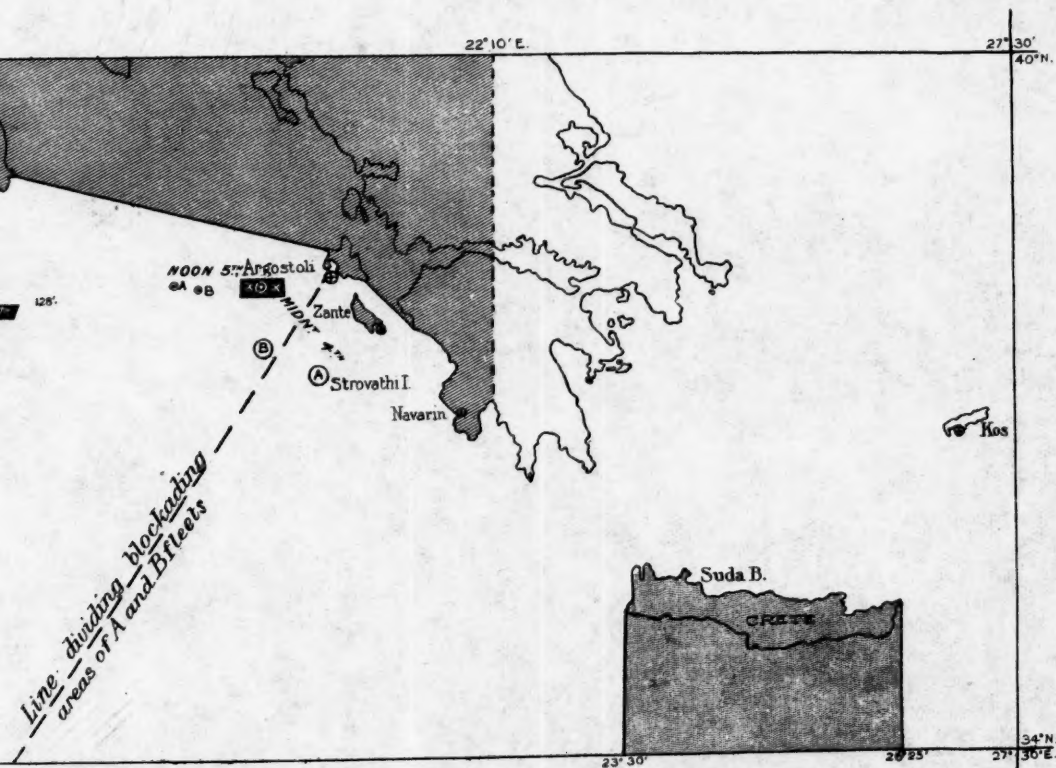
MANŒUVRES AREA OF MEDITERRANEAN

Showing positions of the flagships of A B battle squadrons thus:— ⓐ. ⓑ. and X bat



MEAN STRATEGICAL OPERATIONS, 1902.

B. and X battle squadron thus: ~~NOON 5~~ from Midnight Oct. 4th to Midnight Oct. 6th.



Quarters.

⊕ First-Class Ports.

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No.	Date.	Hour.	Ship Claiming.	Ship Claimed.	Result.	Remarks.
13	2 Oct.	7.45 p.m.	Ariel ...	Fawn ...	{ Neither claim allowed.	{ Ariel had an injured man on board whom she was conveying to Argostoli. The rules do not provide for such cases. Navigation lights should have been carried.
		7.42 p.m.	Fawn ...	Ariel ...		
14	2 "	7.30 p.m.	Foam and Banshee	Myrmidon ...	{ No result	Myrmidon already out of action.
		7.35 p.m.	Myrmidon ...	Foam and Banshee.		
15	2 "	10.22 p.m.	Ariel ...	Desperate ...	Desperate out of action.	Under fire from shore battery.
16	2 "	10.30 p.m.	Flying Fish ...	Banshee ...	{ Both out of action.	
17	2 "	10.28 p.m.	Banshee ...	Flying Fish ...	No result	Claim not established.
18	2 "	8.11 p.m.	Pegasus ...	Two destroyers		
19	3 "	11.35 p.m.	" ...	" ...	{ Both out of action.	" "
		0.37 a.m.	" ...	No. 91 torpedo-boat.		
		0.39 a.m.	No. 91 torpedo-boat	Pegasus ...	No result	Pegasus already out of action.
20	3 "	1.43 a.m.	Pegasus ...	One torpedo-boat.		
21	3 "	1.49 a.m.	" ...	No. 95 torpedo-boat.	{ " "	" "
		"	Torpedo-boat 95	Pegasus ...		
22	3 "	5.4 a.m.	Foam ...	Chamois ...	"	Chamois already out of action.
23	3 "	5.27 a.m.	Chamois ...	Nos. 93 and 94 torpedo-boats.	"	" "
24	3 "	5.30 a.m.	Myrmidon ...	One torpedo-boat.	"	Myrmidon already out of action.
25	3 "	9.30 p.m.	Coquette with Cygnet and Ariel.	Panther ...	Panther out of action.	
26	3 "	10.15 p.m.	Earnest, Locust, and Orwell	Coquette, Foam, Albatross and Cynthia.	{ No result	Time for which engaged too short.
		"	"	Orwell and Locust		
27	3 "	9.30 p.m.	Foam ...	One destroyer	"	Destroyer cannot be identified.
28	3 "	11.15 p.m.	Orwell ...	Cynthia ...	"	Time for which engaged too short.
29	4 "	1.20 a.m.	Pegasus ...	Two destroyers	"	Pegasus already out of action.
30	4 "	2.5 a.m.	"	"	"	" "
31	4 "	6.39 p.m.	Ariel, Coquette, and Cygnet	Fawn ...	Fawn out of action.	
32	4 "	6.45 p.m.	Foam ...	Chamois ...	No result	Chamois already out of action.
33	4 "	8.0 p.m.	Niobe ...	One destroyer	"	Destroyer cannot be identified.
34	4 "	9.53 p.m.	Formidable ...	"	"	"
35	4 "	10.44 p.m.	Panther ...	Aboukir ...	"	Panther already out of action.
36	5 "	1.0 a.m.	Foam ...	Doris ...	Claim not allowed, but we consider in war the attack would have been successful.	No torpedo fired as class of cruiser was doubtful.
37	5 "	1.45 a.m.	Hannibal ...	One destroyer	No result	Destroyer cannot be identified.
38	5 "	5.11 a.m.	Hermione ...	"	"	"
39	5 "	5.16 a.m.	Brilliant ...	Ariel ...	Ariel out of action.	"

The "Desperate" was put out of action owing to her getting within range of supposititious batteries, which would be in actual existence to protect a first-class port.

FRANCE.—The following are the principal appointments which have been made: Capitaines de Vaisseau—L. A. Texier to "Amiral Aube"; E. M. Le Léon to "Formidable"; L. J. M. Lormier to "Masséna."

Capitaines de Frégate—A. V. Adam, M. A. Gros, C. E. Favereau, E. H. M. Ropert to Capitaines de Vaisseau; R. C. E. Mandet to "Léger" and *Défense-Mobile* of Algeria.—*Journal Officiel de la République Française.*

The new first-class armoured cruiser "Jeanne d'Arc" has been fitted out to convey the President of the Republic on his approaching visit to Algeria. In order to make certain that her engines and boilers are now in complete working order she was sent on an experimental run to Algiers and back. During the outward run she had fine weather, and averaged 18.2 knots; on her return she experienced rougher weather, but maintained an average of 18.5 knots, the engines making 116 revolutions per minute. The temperature of the engine-rooms and stokeholds seems to have been fairly bearable, and everything worked well. According to the published programme, the President was to embark at Toulon on the 14th inst., arriving at Algiers the next morning. The "Jeanne d'Arc" will be escorted by the first-class battle-ships "St. Louis," flag-ship of Vice-Admiral Pottier, the Commander-in-Chief of the Mediterranean Squadron, "Gaulois," and "Charlemagne," with the destroyers "Epée" and "Hallebarde." The Minister of Marine will be on board the "St. Louis." At the same time the Second Division of the Mediterranean fleet, consisting of the first-class battle-ships "Iéna" (flying the flag of Rear-Admiral Marquis), "Bouvet," and "Jauréguiberry," with the destroyers "Pertuisanne" and "Pique," will proceed to Oran, while the Cruiser Division under Rear-Admiral Boutet, consisting of the armoured cruisers "Pothuau" (flag), "Latouche-Tréville," and "Chanzy," with the third-class cruisers "Galilée" and "Linois," and the destroyer "Condor," will be detached to Bizerta.

The Northern Squadron commenced completing to its full sea-going effective on the 1st inst., but there has been some difficulty in providing the required number of men; on the same day, also, at Brest, Vice-Admiral the Marquis de Courthille, the Commander-in-Chief, transferred his flag from the first-class battle-ship "Formidable" to the first-class battle-ship "Masséna," which is to be the flag-ship for the future; this is a gain in strength to the squadron, the new flag-ship being a more modern and much more powerful ship than her predecessor, which will remain, however, one of the ordinary ships of the squadron. The "Masséna's" crew is to be completed from that of the second-class battle-ship "Courbet," which ship has been now detached from the squadron, and is to be paid off into the Special Reserve at Brest. The squadron as constituted for the present is as follows:—

First Division.

First-class battle-ships—"Masséna" (flag-ship of Commander-in-Chief), "Formidable."

Coast-defence battle-ship—"Amiral-Tréhouart."

Second Division.

Coast-defence battle-ships—"Bouvines" (flag-ship of Rear-Admiral Péphan, Second-in-Command), "Valmy."

Cruiser Division.

First-class armoured cruisers—"Bruix" (flag-ship of Rear-Admiral Bugard), "Dupuy de Lôme."

Destroyers—"Cassini," "Yatagan," "Harpon," "Fauconneau," "Espingole."

The place of the "Amiral-Tréhouart" in the First Division is shortly to be taken by the second-class battle-ship "Dévastation," while on the conclusion of the Presidential cruise the "Jeanne d'Arc" is to relieve the "Bruix" as flag-ship of the Cruiser Squadron; and in due course the new armoured cruiser "Marseillaise" will take the place of the "Dupuy de Lôme," which has long been in a crippled condition, owing to the state of her engines and boilers.

The new first-class armoured cruiser "Montcalm," bearing the flag of Rear-Admiral Le Dô, arrived at Saigon on the 14th ult.; on the 18th Vice-Admiral Maréchal, the Commander-in-Chief of the China Squadron, transferred his flag to her from the "Redoutable"; Rear-Admiral Le Dô at the same time transferring his flag to the first-class cruiser "Chateaurenault." The "Redoutable" has since been placed in the Reserve at Saigon.

The first-class battle-ship "Marceau" will shortly be commissioned at Toulon to take the place of the "Magenta" as sea-going training-ship for the torpedo school, the latter ship taking the place of the "Marceau" in the First-class Reserve.

The New Battle-ships.—The Yacht is jubilant that the good sense of the Budget Committee has triumphed over the inexplicable resistance of the often badly-advised Minister of Marine, and that the remaining five battle-ships of the "République" type are at last to be proceeded with. In the opinion of that journal, M. de Lanessan, M. Pelletan's predecessor, is the only civilian Minister of Marine in recent years who has really understood the needs of the fleet, and who thought out the programme of new constructions from a broad point of view, so it was all the more to be regretted that the execution of his programme was so soon suspended. The country and Navy are to be congratulated that the Budget Committee, and in especial the reporter, M. H. Leygue, have had patriotic firmness enough to overrule the Minister of Marine, and to insist that the scheme evolved by M. de Lanessan should be carried out.

Of the new ships, the "Démocratie," like the "République," will be built at Brest; the "Liberté" at St. Nazaire; the "Vérité" at Bordeaux, and the "Justice" and "Patrie" at La Seyne, near Toulon. The dimensions of the ships will be as follows:—Length, 439 feet; beam, 79·5 feet; displacement, 15,000 tons, with a draught of 27 feet 4 inches. The immersed surface of the midships section will be 179·75m.²; displacement by centimetre of immersion above the load water-line, 22·6 tons; height of latitudinal métacentre above the centre of the hull: $\rho = 5·36$ m.; height of latitudinal métacentre above the centre of gravity: $\rho - a = 1·1$ about. Normal I.H.P. about 10,500; maximum I.H.P. 18,000, giving a speed of about 18 knots; this is 500-H.P. more in the five new ships than the "République" has, involving an increase in the cost of the machinery of 150,000 francs (£6,000); the machinery for the "République" is to cost 2,350,000 francs (£94,000); and that for the new vessels 2,500,000 francs (£100,000). The types of water-tube boilers selected for the new ships are the Belleville and the Niclausse, but it is not settled which ships are to have the respective boilers. The coal supply will be 1,800 tons, which should give a radius of action at 10 knots of 8,300 miles. There will be no steel keel, but a false keel of teak, and bilge keels.

Protection will be afforded by a steel belt, extending from the stem aft to frame No. 108, where there will be a transverse bulkhead 8 inches

thick; the belt will extend from 7 feet 6 inches above to 4 feet 10 inches below the water amidships, with a maximum thickness of 11 inches, tapering above to 9½ inches at its upper edge, and to 4 inches at the lower; from frame No. 28 to the stem the belt will be 7½ inches thick at the water-line, tapering to 5½ inches at the upper edge to 3½ inches at the lower, and reaching from 8 feet 3 inches above the water-line to 9 feet 9 inches below; the after part of the belt similarly tapers to 7 feet 6 inches above and 3 feet 2 inches below the water-line; the teak backing will be 3½ inches thick, and the inner plating 0.78 inch.

The armament will consist of four 12-inch guns in turrets, one forward and one aft; eighteen 6½-inch Q.F. guns, twelve of which will be mounted in couples in small turrets, three on each side of the upper deck, the remaining six guns being mounted in a casemate amidships on the main deck, three on each side; twenty-four 3-pounder Q.F. guns, and five torpedo tubes, two of them submerged. The bases of the heavy turrets will be protected by 12.8-inch armour, the turrets having 11-inch armour on the fore side, with 8-inch armour in rear of the fore turret, and 4-inch on the after; the hoods will be of 3-inch steel. The turrets and casemate for the 6½-inch Q.F. guns will be protected by 6.3-inch plating, the hoods of the former being of 1.7-inch steel, and the splinter bulkheads in the latter of 4-inch steel.

The *Yacht* considers that the new ships are quite equal, if not superior, to any battle-ships now building for foreign Powers, but remarks that in the matter of speed it is difficult to believe that the 18,000-I.H.P. of the "King Edward VII." Class will give them a speed of 18 knots, or that the "Venerable" and "London," of 15,000 tons displacement, have made 18.3 and 18.1 knots respectively with engines only developing 15,345-I.H.P. in the first-named ship, and 15,265-I.H.P. in the latter, if it is necessary, in the case of the French ships, in order to obtain 18 knots, to have engines developing 17,500 and 18,000-I.H.P.; if the English ships really do obtain the speed with which they are credited, then there must be something wrong about the form of the hulls of the French ships, and this the *Yacht* refuses to believe.

The Loss of the "Espingole."—M. Lanthiome, of Toulon, has undertaken to raise the sunken destroyer "Espingole." According to the contract entered into with the Minister of Marine, he is to deposit 4,000 francs (£160) caution money, and is to be allowed two months to do the work, the necessary material being placed at his disposal by the dock-yard authorities. He will receive the sum of 60,000 francs (£2,400) if he floats and delivers her to the French naval authorities, and an additional 10,000 francs (£400) if he brings her into dock. A further 20,000 francs (£800) will be paid if the boilers, guns, and accessories are recovered in a state to allow of their being used again, and yet another 30,000 francs (£1,200) if the hull is recovered in a like condition.

Coaling Records.—At the recent coaling of the French Mediterranean Squadron the following amounts were taken on board at the under-mentioned rate: Battle-ships—"Jauréguiberry," 480 tons in 4½ hours; "Iéna," 450 tons in 4½ hours; "St. Louis," 550 tons in 6 hours; "Charlemagne," 500 tons in 6½ hours; "Bouvet," 520 tons in 8 hours; "Gaulois," 520 tons in a little under 9 hours. First-class armoured cruisers—"Pothuan," 440 tons in a little under 7 hours; "Chanzy," 500 tons in 8½ hours; "Latouche Tréville," 460 tons in 11 hours. Third-class cruisers—"Linois," 190 tons in 3½ hours; "Galilée," 300 tons in 5½ hours; and the torpedo-avisos—"Condor," 100 tons in 5 hours.

Collision with a Submarine.—A collision occurred recently in Cherbourg Harbour between the submersible submarine "Narval" and the tug "Navette." The former, which was partially submerged at the time, was only slightly damaged, but the tug received such injuries that she sank in $4\frac{1}{2}$ fathoms in less than a quarter of an hour. The accident shows that the hulls of these small submersibles have greater strength and resisting power than was supposed.—*Le Temps, Le Yacht, and Le Petit Var.*

UNITED STATES.—*Trial of Submarines.*—A number of successful trials of the submarine torpedo-boats "Adder" and "Moccasin" have been recently held in Peconic Bay, in the presence of the Trial Board of the U.S. Navy, of which Captain C. J. Train is president. At the last trial of the "Adder," on November 17th, she remained three hours under water, and changed from full surface speed to full speed submerged in about 30 minutes. A change from submerged to surface speed was made in 20 minutes. She made a submerged run of one mile with a turn, and fired a torpedo, rising twice for observation. While under water the boat got aground. Captain Cable, in charge, slowed down to prevent running further on and ordered two men aft. This did not have the desired effect and he immediately blew out his amidship tank. With a bound the "Adder" came to the surface of the bay, and 2 minutes later the tank was filled, the boat was again submerged, and was under way.

The official figures give screw revolutions as 171·9 a minute, and her average speed for the 3 hours was 6·88 knots. At the end of the run the air was perfectly good, though somewhat stuffy, although no fresh air had been admitted. Slightly less than 21 knots were covered in this run, and there were only 4 observations of a total of 4 minutes.

At the trial of the "Moccasin" on 18th November she ran under water for a mile, turned, ran back over the course, discharged a torpedo, and proceeded to the starting point. Her course was steered as accurately under water as that of a boat on the surface. Three "rises" of a minute each were permitted under the terms of the Trial Board's conditions, in order to allow the pilot to get his bearings and find the target. At 1:39:20 the "Moccasin" rose for 35 seconds, then dived and proceeded until 1:41:20, when a 30-second glimpse was taken and again at 1:44:30, for a last look of 35 seconds. Then the boat headed in for the target. A hundred yards from the target a torpedo was discharged and deflected 50 feet to the left of the target. As this shot would have hit a battle-ship, though not within the 150 feet zone of greatest vulnerability, the trial was considered quite satisfactory. The 12-hour surface test of the vessel was made on November 19th, and her engines were kept going continually during that time, without mishap. The submarine torpedo-boats "Adder" and "Moccasin" and the "Holland," already in commission, are to be organised in a flotilla. As fast as other submarines now building on the Atlantic coast are completed, they will be added to the flotilla, the first voyage of which will be through the Raritan and Delaware canals into the Chesapeake Bay, and thence to Norfolk, after which they will proceed to the warmer waters of the North Carolina sounds, where they will engage in tactical manœuvres to further test their value.

The following is the Report of the Board appointed by the Navy Department's order of 7th November, for the purpose of making an

examination of the submarine torpedo-boats "Adder" and "Moccasin," and of witnessing and reporting upon the trials of the vessels:—

It states that the standardisation trial with the "Adder" for surface run in light condition under gasoline engine was satisfactorily made, a mean speed of 8.732 knots being made for one double run, the contract being 8 knots. The trial awash under gasoline engine only was also successful, a mean speed of 8.12 knots being made, the contract requirement being 7 knots. On the run in completely submerged condition, under the electric motor only, a mean speed of 7.08 knots was made, the contract requirement being 7 knots.

The trial for surface speed in light condition, gasoline engine only, on a run in free route of not less than 10 nautical miles, at a speed of not less than 8 knots, was successfully completed, a speed of 8.86 knots being maintained for 2 hours 58 minutes 30 seconds; during the 12 hours' endurance trial for speed awash the vessel made 8.26 knots, 7 being required.

A 3 hours' submerged endurance and torpedo trial was made, in which a two-mile run and torpedo trial, at speed of not less than 7 knots, as determined by the standardised screw, was successfully performed; although the torpedo did not pass between these flags forming the target, yet the vessel was fairly pointed between these flags, so that a properly adjusted torpedo should have struck the target. The vessel remained under water for the full 3 hours, but did not maintain the contract speed of 7 knots, a partial circuit reducing the speed during 20 minutes, and touching the bottom during 15 minutes. For 2 hours 25 minutes, however, the speed of 7 knots was maintained, but the average speed for the entire 3 hours was 6.88 knots. With the battery cells in a proper condition the vessel will have the endurance in the submerged condition called for.

The 12 hours' endurance test given the gasoline engine showed speed 8.86 knots, the contract calling for 8 knots. The behaviour of the vessel and machinery during this trial was satisfactory. The Board reports that the "Adder," including hull, fittings, machinery, and appurtenances, is well and strongly built, and in general in conformity with the contract. The vessel is complete and ready for delivery, except in minor points. The Board therefore recommends the acceptance of the "Adder," after certain defects and items of unfinished work are satisfactorily completed.

The Board calls attention to the fact that the trials do not provide for any trial under service conditions *at sea*, and recommends that when the remaining vessels of this class are submitted for trial, one of them should be given endurance tests *at sea*. Meanwhile it reserves its opinion as to the general questions of stability, manœuvring powers, and habitability *at sea*.

The Board notes that the locality at present selected for trials of these submarine boats is ill-adapted for the purpose, while the trial courses recently established by the Coast Survey near Provincetown, Mass., possess all the qualifications necessary to suit all the conditions of the Department's recent instructions.

The Board recommends that, instead of subjecting any additional vessels of this class to "endurance trials" of the character which the "Adder" successfully passed, one of the remaining boats be submitted to "endurance trials" of the following character.—1. To make a run under "light condition" for a distance *at sea* of about 50 miles—for example, from New Suffolk, Long Island, to Great Salt Point, Block Island. 2. To make, in the true awash condition, and in the submerged condition, a run of at least 15 miles total length, to be made to a definite point represented by a vessel anchored in the open sea at a predetermined point,

and at least 10 miles of this run to be made in the submerged condition at a speed of not less than 7 knots per hour.

The Board considers that the ability of the vessel to make a speed of 7 knots in the awash condition with the gasoline engine is fully demonstrated by its fulfilling the requirements as to performance in the light condition (then making 8 knots), and therefore the trial of the vessel in the "awash condition under the gasoline engine" is unnecessary.

The Board calls special attention to the importance, when these vessels are accepted, of keeping them all in full commission, and giving them as much active service as practicable.

The use of the periscope permitted the vessel to remain under water for over two hours without rising to the surface, and clearly demonstrated that a properly designed instrument of this character is essential to developing to the fullest extent the possibilities of these vessels when navigating submerged or in the true awash condition immediately preceding diving.—*Army and Navy Journal*.

Explosion on the "Massachusetts."—A serious accident from the explosion of a powder charge in the after starboard turret for the 8-inch guns, occurred on board the battle-ship "Massachusetts," on the 16th January, off Porto Rico, which resulted in the death of nine men, forming the crew. It appears that both 8-inch guns in the aft starboard turret were ready for firing. While the turret crew were opening the breech of an 8-inch gun, the lock of which was cocked, the combination primer used to ignite the charge was exploded by percussion. The breech was partly open at the time, and in consequence the exploded charge finding a vent there, sent its blast into the turret. There were 83 lbs. of powder in this charge, and the explosion was confined to the small 8-inch turret. Every one of the 9 men in the turret was terribly burned. The officer of the turret, Ensign W. K. Wortman, was standing outside, with his head near the turret porthole. The pressure of the air knocked him across the deck.

A despatch from Admiral Higginson indicates that the fatalities were due to a disregard of specific orders issued by the Navy Department to open the breech of a gun while the primer is in place.

In an official report as to the recent premature explosion of an 8-inch gun on board the U.S.S. "Massachusetts," from which the entire gun's crew lost their lives, Captain G. A. Converse, president of the Board appointed to examine into the accident, says:—

"It appears that the gun was loaded, the breech locked, primed, and ready for electric firing. One of the gun's crew cocked the firing lock, which broke the electric current. Consequently the gun could not be fired electrically, as ordered. It then became necessary to restore the electric connection by lowering the hammer of the firelock. It is supposed that fearing the lock might slip while being lowered, and thus fire the gun prematurely, an order was given to open the breech in order that the plug might be turned away from the gun before letting the hammer of the firing lock down. It appears probable that in so doing the lanyard which fires the lock must have been caught or pulled accidentally, thus discharging the primer. A sheet of flames shot from the primer into the gun, where lay the powder charge, and the explosion occurred. The primer was removed from the gun after the explosion and found to have been fired by percussion."—*Army and Navy Journal*.

Launch of the "Chattanooga."—The third-class cruiser "Chattanooga" was launched from the yard of the United States Shipbuilding Company at Elizabethport, N.J., on the afternoon of 7th March.

The "Chattanooga" has a length of 308½ feet over all; load water line, 292 feet; extreme beam, 44 feet; draught, 15 feet 9 inches; with a displacement of 3,200 tons, and is expected to develop a speed of 16½ knots an hour. She is a steel protected cruiser, sheathed with wood below the water-line. She has a double bottom subdivided into 25 water-tight compartments. There are 10 transverse water-tight bulkheads to above the water-line, and 4 steel decks. The protective deck over the engines and boilers is reinforced with 2-inch nickel steel plates on a slope of 30°, and extending below the water-line a distance of 3 feet. A deep cofferdam filled with corn pith cellulose is built around the centre ship in the region of the water-line. Fireproof wood will be used wherever possible and the vessel is equipped with long arm water-tight doors, operated from a central station. The engines and boilers, guns, and other internal fittings are yet to be put in the vessel.

The engines are of the vertical inverted cylinder direct acting triple-expansion type, with 18-inch, 29-inch and 35-inch cylinders a 30-inch stroke, and an I.H.P. of 4,500. There are to be 6 boilers, with a grate surface of 300 feet, and a total heating surface of 13,000 square feet, designed for a working steam pressure of 275 lbs. to the square inch. The bunker capacity is designed for 700 tons, affording a cruising radius of more than 5,000 knots.

The armament is to consist of ten 5-inch Q.F. guns, 1 fore and 1 aft, on the main deck, and 2 broadsides of 4 each on the gun-deck, the latter protected by nickel steel plating 1½ inches thick. The secondary battery will consist of eight 6-pound rapid-fire guns, two 1-pounders, four machine guns, and one field gun for landing.—*Army and Navy Journal*.

Steam Trials: The "Maine."—The new first-class battle-ship "Maine" recently made a successful trial trip on the course from Cape Ann to Cape Porpoise, and although she did not break the world's record trial for battle-ships, as many had hoped she might do, she gave a most excellent account of herself, and has established a record as the fastest battle-ship in the U.S. Navy. As officially reported by Captain C. J. Train, U.S.N., president of the trial board, representing the Navy Department, the mean speed uncorrected for trial errors was 17.96 knots. It is probable that the corrected figures for trial allowances will bring the speed up to the requirement of 18 knots. On the last leg of her course it is reported the "Maine" reached a speed of 19 knots. Not a single accident marked the trip.

On her outward trip the vessel faced a north-east wind of about 25 knots.

The coal used on the outward trip was common run of the mine, semi-bituminous, taken on at Philadelphia. When the vessel reached Boston, it was found she needed more ballast to bring her down to the required draught, and 200 tons of the finest variety of coal was taken on board.

When it was apparent that the ordinary coal was not meeting the requirements, the first-class coal taken in at Boston was used. A great change was observed at once, and more steam was made than could be used.

The trial was all the more interesting because the "Maine" is the first vessel in the Navy to be equipped with the French Niclausse boiler. The following facts relative to the engine department of the vessel during her trial will be found of interest. The engines easily made the number of

revolutions to reach the required speed, 128 being the average. The maximum revolutions attained for any long period were 130, but one screw for a few minutes was timed at 133 revolutions. Her engines are in splendid condition, her boilers steamed freely and compare favourably with any other type of water-tube boiler. The advantages claimed for the water-tube boiler include large economies in the space occupied and in the weight of water carried, owing to the rapid circulation therein.

At the time of the test, to see how quickly her engines could be stopped and reversed, the action was practically instantaneous, being completed in 10 seconds. She was steered with her screws, one going ahead full-speed and the other astern full-speed, turning nearly in the radius of her own length. There was no large amount of water used on any of the bearings, none whatever being used except to saponify the oil.

The I.H.P. developed was about 17,000. This is the first trial of an American battle-ship in which exact service conditions were followed for a large portion of the trip. Her stokers were men who had never fired a water-tube boiler before working on the "Maine."

The temperature in the fire-rooms was nearly 20° cooler from what it is in the old Scotch-boilered battle-ships. The draught of the ship was 23 feet 6 inches on the trial, her displacement being 12,350 tons.

There was no failure of any of the propelling machinery, but in the test of the windlass, which followed the speed trial, one of the springs of it broke when about 30 fathoms of the immense chain cable were out. This made it impossible to hoist the anchor by the ordinary windlass, and delayed the return trip nearly two hours. The damage is unimportant, and it does not endanger the acceptance of the ship.

At the close of the speed trial the ship was turned hard aport and hard astarboard at full-speed, and also made a figure 8, and these extreme tests of the steering apparatus discovered no defect. The angle of heel was not large.

The "Nevada."—A very satisfactory speed trial of the new monitor "Nevada," built by the Bath Iron Works, of Bath, Maine, took place on 18th December over a measured course of 13.2 knots long, beginning 5 miles east by north from Thatcher island lights, Massachusetts, and extending north-east. She steamed along at the rate of 12.8 knots per hour, which is an excess of 1½ knots over her contract speed. Captain C. J. Train and Captain W. S. Cowles, U.S.N., and other members of the Navy Trial Board, were on the vessel, the working force of which were supplied by the Bath Iron Works. The following particulars concerning the trial are given:—The first buoy was passed at 11:36:46.5, the screws making fairly close to 200 revolutions a minute, and she was doing better than her required 11½ knots. The second stake-boat was passed at 12:05:47.5, and the speed showed 13.6 knots an hour for the first half of the first leg.

The turn was reached at 12:38:48.5, which showed the monitor to be making only 11.9 knots, reducing the average speed for the whole leg to 12.8 knots an hour.

A double curve was made for the turn, and the vessel took 6 minutes to make it. She passed the stake-boat again, going south, at 12:44:48.5. She made the midway stake-boat again at 1:16:48.5, and the last boat was passed at 1:45:15 flat, and the monitor slid over toward "Gloucester" to try turning round. She occupied 5 minutes in making a complete circle this time.

Off Eastern Point the engines were stopped for the anchoring test, which was accomplished to the satisfaction of the Board, though the

windlass engines got heated up so that they had to be stopped and cooled before the anchors were inboard again.

The contractors, who kept their own records, made the average speed 12.95 knots an hour, against 12.8 recorded by the Board. They also made 186 revolutions a minute, as against 200 recorded by the Board. The coal consumption showed 2.4 lbs. per hour per I.H.P. used. The average fire-room temperature was 110° Fahr., and the engine-room temperature 90°.

The "Nevada" is of 3,230 tons displacement, and her contract price is 960,000 dollars. No bonus was offered for extra speed, which explains in part why the vessel was not harder pushed. The conditions under which she registered nearly a steady 13 knots show that she could have done 14 had she been called on for it.—*Army and Navy Journal*.

MILITARY NOTES.

PRINCIPAL APPOINTMENTS AND PROMOTIONS, MARCH, 1903.

Major-General and Hon. Lieut.-General J. T. Dalyell to be Colonel of the Bedfordshire Regiment. Major-General F. W. Kitchener, C.B., to command a 1st Class District in India. Lieut.-Colonel and Brevet Colonel E. O. F. Hamilton, C.B., from h.p. to command a 2nd Class District in India, with the substantive rank of Colonel in the Army, and is granted the temporary rank of Brigadier-General whilst so employed. Major and Brevet Colonel S. C. H. Monro, Seaforth Highlanders, from a Colonel on the Staff, to be a Brigadier-General on the Staff, to command the Potchefstroom District, and is granted the local rank of Brigadier-General whilst so employed. The undermentioned officers to command 2nd Class Districts in India, with the temporary rank of Brigadier-General whilst so employed:—Colonel G. L. R. Richardson, C.B., C.S.I., C.I.E., from a Colonel on the Staff in India; Colonel F. H. Plowden, from A.A.G. in India; Colonel L. Dening, D.S.O., from a Colonel on the Staff in India; Colonel A. G. F. Browne, D.S.O., I.A., from a Colonel on the Staff in India. Lieut.-Colonel and Brevet Colonel G. F. Francis, I.A., to be an A.A.G. in India, with the substantive rank of Colonel in the Army. Colonel R. M. Greenfield, from A.A.G., Army Head Quarters, India, to be D.A.G. of a command in India, with the temporary rank of Brigadier-General whilst so employed.

FRANCE.—*Autumn Manœuvres for 1903.*—The manœuvres for the current year have been regulated as follows:—

1.—ARMY MANŒUVRES.

Two Army manœuvres will be carried out, one in the Midlands, and the other in the South-East.

a. *Midland Manœuvres.*—At these manœuvres, of which General de Négrier will act as director, the following troops will take part, viz.: the XIIth and XIIIth Army Corps, the 1st Cuirassier Brigade of the 7th Cavalry Division, and the 8th Cavalry Brigade. The artillery of the two army corps will be completed: for the XIIth Army Corps by the brigade division of the Practical Gunnery Course and by a brigade division of the 19th Artillery Brigade; for the XIIIth Army Corps by 2 brigade divisions of the 19th Artillery Brigade.

b. *South-Eastern Manœuvres.*—At these manœuvres, at which General Metzinger will officiate as director, the following troops will take part, viz.: the XIVth Army Corps, the Lyons District Brigade, the Lyons Zouave battalions, and 4 battalions of Alpine Chasseurs, which will be selected later; the XVth Army Corps, 3 battalions of Alpine Chasseurs, to be selected later, the 6th Cavalry Division. The artillery for these two

army corps will be completed, for the XIVth Army Corps by 2 brigade divisions of the 7th Artillery Brigade; for the XVth Army Corps by a brigade division from the 16th and another from the 17th Artillery Brigades.

2.—BRIGADE AND DIVISION MANŒUVRES.

a. *Brigade Manœuvres* will be carried out in the XVIth, XVIIth, and XVIIIth Army Corps, for period of 12 days, including going and returning. The troops stationed in Corsica will carry out their manœuvres for a period of 10 days.

b. *Division Manœuvres* will be carried out in the 1st, IIInd, IVth, VIth, VIIth, VIIIth, IXth, Xth, XIth, and XXth Army Corps, and by the 5th Division of the IIIrd, and by the 9th Division of the Vth Army Corps.

3.—CAMPS OF INSTRUCTION.

Commencing from 1903, the assembly of troops of all branches of the Service, with a view to the carrying out of manœuvres on broken ground, combined evolutions, and musketry, will be included in the normal Army instruction, in the same manner as autumn manœuvres. In the 1st, IIInd, VIth, Xth, XIth, XVIth, and XXth Army Corps, which possess instruction camps in their districts, or have them close at hand, the generals commanding the army corps are authorised to make a return of the whole of the credits which are given them for autumn manœuvres, garrison manœuvres, and collective and field firing, in order to carry out combined evolutions in camp, musketry instruction, and to organise autumn and garrison manœuvres to the best instructional advantage of the troops under their orders.

In addition, the 6th Division of the IIIrd, and the 10th Division of the Vth Army Corps will carry out combined evolutions and musketry at the camps at Mailly and Châlons respectively.

4.—CAVALRY MANŒUVRES AND EVOLUTIONS.

a. *Cavalry Manœuvres* will take place under the superintendence of General Poulleau. At these manœuvres the 4th and 5th Cavalry Divisions and the 2nd and 6th Cavalry Brigades will take part. Two cavalry division manœuvres will also take place, and will be carried out, the one by the 8th Cavalry Division, to which will be attached the 7th Cavalry Brigade, under the commander of the 8th Cavalry Division; the other by the 4th, 6th, and 11th Cavalry Brigades, and the Artillery Brigade Division of the 1st Cavalry Division. The director for these manœuvres will be appointed later. The organisation of and the period for each of these manœuvres will be laid down by special instructions.

b. *Cavalry Evolutions.*—Brigade drills will be carried out by the 1st, 3rd, 5th, 9th, 16th, 17th, 18th, and 20th Cavalry Brigades, by the 2nd and 6th Cuirassier Brigades, by the 5th Dragoon Brigade of the 1st Cavalry Division, and by the 2nd Dragoon Brigade of the 2nd Cavalry Division. These drills will last for 8 days, not including the concentration and return marches. Independent of these manœuvres, the brigades of corps cavalry will take part in the division and brigade manœuvres carried out by their respective army corps.

5.—VARIOUS MANŒUVRES.

In addition to the above-mentioned manœuvres, special manœuvres will be carried out in the Alps, the Vosges, as well as in Algeria or Tunis. No fortress manœuvres will take place.

6.—COLONIAL TROOPS.

As a general rule the colonial troops will, as far as the special credits allotted to them will permit, take part in the various manœuvres in the districts of the army corps to which they are attached.

GENERAL OBSERVATIONS.

The following interesting arrangements may be noted :—

Within the limits of the credits allotted them, generals commanding army corps and directors of manœuvres have every latitude given them for laying down their manœuvre programme. The 3rd Division of the IInd Army Corps will, during the month of August, carry out manœuvres in which the Ecole Spéciale Militaire will participate.

Infantry regiments will march to the manœuvres with their 4 battalions, with the exception of those regiments in which no company of their 4th battalion has yet been raised.

The artillery brigade divisions will be composed of 3 batteries. They may be reduced to 2 batteries in corps called upon to furnish artillery units to army corps taking part in the Army manœuvres, according to the resources remaining available after the deduction of the units to be formed.

Exceptionally, and in order to diminish the deductions to be made from the mounted troops, and especially as regards artillery, special credits may be allotted in order to make up the necessary number of horses required for infantry purposes by payment of hire. With this object, as far as possible, those Reservists will be called out who will agree to bring their own horses to the manœuvres.—*Revue du Cercle Militaire*.

New Cavalry Tactics.—Amongst various studies of this subject there is a particularly interesting one by an anonymous writer, in the *Revue de Cavalerie* for July last.

The author of this article commences by pointing out that cavalry attacks in war will still have many chances of success, provided they are launched at an opportune moment against an enemy weakened by heavy losses and more or less demoralised. For this object it will be generally necessary in a battle to keep some cavalry detachments in the front line, always ready to intervene, conformably to the general action. Few units, however, should be employed for this purpose, for which squadrons, or at most regiments, should suffice. The greater portion of the cavalry should be sent to the flank or round towards the rear of the enemy, where it might act in a really efficacious manner. It is to the rôle of cavalry on the flanks that the author devotes the greater portion of his article, and in this regard he desires to see the methods followed at almost all manœuvres resolutely abandoned. Hitherto cavalry, from its exaggerated predilection for mounted action, and by its aversion to dismounted action, has frequently condemned itself to impotence in the face of infantry, and has limited its action to scouting and to generally useless attacks on hostile cavalry. This method of action is no longer admissible, and cavalry has, in other ways, a great task before it. But to accomplish that task it must know not only how to make proper use of its horses—which give it a mobility possessed by no other arm—but also of its carbines, which allow it to attack infantry and artillery under possible conditions. In a word, dismounted action must play a considerable, even a preponderating part, in cavalry tactics. Examples of this method of action may easily be found in the operations of the Russian cavalry in

1877, and in those of the American cavalry during the War of Secession. In these two campaigns the cavalry rendered greater services than in any other modern war; and it invariably retained a liberty and an independence that we do not find in any other Army.

If before an action the commander-in-chief takes care to exactly inform the cavalry commander of his intentions, the latter, leaving the infantry to develop his frontal attack, rapidly turns the position, approaching, as far as possible, under cover, on one of the flanks; then dismounts and opens a heavy fire on the troops before him. This intervention, which will be the more unexpected as the manœuvre is the more skilfully and rapidly carried out, will necessarily provoke a certain confusion in the enemy, who will not know the strength of his assailants nor the direction from which the fire is coming. Should the enemy thus attacked give way, the cavalry should remount rapidly and recommence its attack further on: if, on the other hand, he manœuvres to deliver a counter-attack, the cavalry should disappear quickly, after having forced him to deploy. In no event should the cavalry cling long to the same position: it should first operate on one point and then on another—everywhere, in short, where the conditions are favourable for its intervention; it should harass the enemy, unnerve him with its surprises, and should invariably endeavour to distract as many troops as possible from the principal action.

These cavalry tactics, by assigning an important place to dismounted action against infantry and artillery, demand an excessive mobility and a thorough knowledge of country. Squadrons should know how to move everywhere rapidly, and to profit by all the advantages for taking cover offered by the natural features of the ground. With this object every squadron should have a certain number of men with it trained and equipped as sappers, who could in a few moments fill in a ditch, destroy a hedge, wall, etc. In addition, as cavalry will frequently have to traverse dangerous ground, it should accustom itself to manœuvre in shallow formations. During an action against infantry cavalry must always hold itself in readiness to resist hostile cavalry, and should consequently take due precautions to that effect, and should as a rule maintain a mounted support during dismounted action.

The few preceding lines seem to demonstrate that the author is convinced that the chief objective of every body of cavalry should be the hostile infantry or artillery, and that it should habitually employ the dismounted method of action, charges becoming an exceptional mode of attack almost exclusively reserved for engagements of cavalry against cavalry. This idea, which makes cavalry into a species of mounted infantry will certainly not commend itself to a great many cavalymen. The bases of the new tactics extolled in this article is the great mobility of cavalry, which will alone compensate it for an inferiority caused by the limited number of rifles it can put into line. If, however, it is admitted that dismounted action is destined to play an important and leading rôle in cavalry tactics, more effort should be made to give far greater instruction in the handling of the carbine, in musketry, in skirmishing, and in attack and defence of positions, etc. Cavalry should also be accustomed to mount and dismount with the greatest possible rapidity, and the column of spare horses should always be thoroughly mobile. In conclusion the author shows how the lessons resulting from the South African war support his contentions, with regard to the important part played by mounted infantry with both British and Boers.—*Précis from Revue Suisse Militaire.*

GERMANY.—*War Budget for 1903.*—The draft of the military budget for 1903 amounts, as regards ordinary or permanent expenditure, to 575,788,765 marks, or 7,628,581 marks in excess of that of last year. The distribution of this sum between the States of the Confederation is as follows :—

	Marks.
Prussia and States administered by her	448,161,184
Bavaria	64,082,791
Saxony	42,245,681
Wurtemberg	21,299,479

In spite, however, of the increase referred to above, the present budget contains but few important demands; it is far from providing for all the formations so ardently desired in certain military quarters.

Thus it was hoped that the number of the battalions of each of the last 36 infantry regiments might be increased from 2 to 3, for in Germany more importance than ever is attached to all measures for increasing either the number of infantry soldiers or the power of infantry fire. The financial situation of the Empire has, however, only permitted the formation of two new machine gun groups, to be furnished by the Saxon contingent, which has hitherto had none.

There have lately been numerous complaints made in Germany that the cavalry has not been increased proportionately to the other branches of the Service since 1871. In the present state of affairs there exists an infantry division, the 40th of the XIXth Saxon Army Corps, that is totally unprovided with cavalry. It is, therefore, probable in order to, at any rate partially, fill up this deficiency, that the budget provides for the quartering at Chemnitz—that is to say, in that division's district—of the Saxon squadrons of mounted orderlies, Nos. 12 and 19, which have hitherto been attached to the Guards at Dresden, as well as to the 18th Uhlans at Leipzig. The 1st and 17th Prussian Squadrons of Mounted Orderlies will form a combined detachment at Graudenz. These two squadrons, as well as those already existing at Langensalza, viz., the 10th and 11th Squadrons, will be commanded by field officers, whose employment will in future be provided for in the budgetary cadres, and no longer by officers detached from certain regiments. There will be, in addition, the combined Regiment of Mounted Orderlies, formed in 1891 at Posen, with its five squadrons, and which will thus become a regular regiment, similar in all respects to other cavalry corps.

The foot artillery, which last year had its effectives increased by 3 battalions of 2 companies each, specially meant to garrison the fortresses of Marienburg, Loetzen, and Thionville, has now been given 4 new companies, so as to transform two of these half into entire battalions. The 8th Regiment—Metz-Thionville—is especially designed to benefit by these formations. Germany will thus possess in October, 1903 (without counting the instruction battalion of 3 companies of the School of Gunnery at Jüterbog), 40 foot artillery battalions, made up as follows :—14 regiments of 2 battalions each; 4 regiments of 3 battalions each. All these battalions have 4 companies, with the exception of the 2nd Battalion 12th Saxon Regiment, which has 5.

It is curious to note that this progressive increase of foot artillery, laid down by the introductory report to the Budget as absolutely necessary by reason of the continuity of the development of the defensive system of the Empire, has had no corresponding effect on the organisation of the pioneers. The transformation of the battalions of this branch of the

Service has, therefore, according to certain journals, been postponed to a future date.

A credit of 311,000 marks, to be increased to 400,000 in 1904, has also been demanded for the formation of the Technical Institute at Berlin, with which the Reichstag would have nothing to do last year. The teaching in this new school will be divided into 3 sections—the 1st, for armament and ammunition; the 2nd for engineer service; and the third for railway service and means of communication. The length of the course will be 3 years, as at the War Academy, and officers of the 1st section will be broken up into two distinct groups in their third year of study, the one to specialise in construction, and the other in ballistic questions. The Institute will open on the 1st October next, and will be established in the old Artillery and Engineer School buildings.

One hundred thousand marks are for the purpose of continuing the experiments on the use of automobiles with armies in the field. An increase is given to the credit for giving travelling allowances to officers who are desirous of going abroad to perfect themselves in foreign languages.

The Military Year 1902.—The year 1902 was not remarkable for any important changes in the organisation of the German Army, as was the case, for instance, when the field artillery was being considerably altered and increased, or when the infantry was having additions made to the number of its units. Up to the present time the third arm, viz., the cavalry, is still awaiting changes in its organisation. It should be remembered that on the 1st October last 7 new machine gun groups and 6 companies of foot artillery were formed. The combined machine gun groups form a new arm, betwixt infantry and artillery, and might in special cases be called upon to play a very important rôle. Hitherto this new arm has, as a rule, manœuvred in conjunction with the cavalry, to which it was attached, but it is probable that in the future it will be called upon to play an equally important part, independently of cavalry operations. The machine gun is an arm of too recent creation for definite regulations to be laid down for its employment. Its final introduction into the Army has at the same time necessitated an increase in the effective of the *personnel*.

An increase in the effective of the foot artillery has for some time been a vital necessity, owing to the increasing importance of the part played by heavy field guns reserved for the attack of fortresses and *forts d'arrêt*. In spite of this fact, the Reichstag only voted 6, instead of the 10 foot artillery companies asked for.

The effective of 495,500 men laid down by the law of 25th March, 1899, has been reached since the 1st October last. If to these 495,500 men are added 29,000 officers and military clerks, 81,000 non-commissioned officers, and 8,000 one-year volunteers, it will be seen that the total strength of the German Army amounts to 613,000 officers and men. At the present time the German Army consists of 625 infantry battalions, 432 cavalry squadrons (17 of which are Mounted Orderlies), 533 field batteries, 39 foot artillery battalions (consisting of altogether 163 companies), 13 machine gun groups, 29 pioneer battalions, 11 battalions of communication troops, and 23 transport battalions.

There is nothing to notice with regard to the improvement of arms or of technical innovations. That excellent German military journal, the *Cerebral*, writes thus on this subject:—"The question of the new field

gun of the future has not been discussed amongst us, except in literature. After France had replied to the adoption of the German field gun, model 1896, by the introduction into her artillery of the shield-protected gun, recoiling on its carriage, a strong movement in favour of this latter form of gun took place in Germany, but only in military literature. For a long time the largest German gun foundry was most reserved regarding this new system, because it appeared to entail too many objections for its employment in the field, and also because it had constructed an excellent gun provided with a trail spade. Many States, as a result of exhaustive experiments, had already pronounced in favour of this latter system, when the Krupp firm succeeded, thanks to its untiring efforts, in producing a gun recoiling on its carriage, and strong enough for use in war, and which has been adopted by many countries, as Italy, Denmark, and Switzerland. The discussion in Germany on the subject of the adoption of this gun is still purely a literary one, as, naturally the Commission for Artillery Experiments has allowed nothing to transpire with regard to the experiments which it is carrying out on a large scale." A fight for and against the adoption of shields is also raging, but one can only wait and see if the Commission will decide in favour of the gun recoiling on its carriage, with shield protection, or not.

Germany, following the example of England, is carrying out experiments in the employment of automobiles and heavy traction locomobiles for war purposes. Thus the War Minister has issued a circular inviting manufacturers to produce heavy traction locomobiles, with spirit fuel, to be used for Army requirements.

Wireless telegraphy has also made marked progress as regards its use in land warfare. Germany seems inclined to favour Professor Braun's system. A wagon constructed on this system took part in the Imperial Grand Manœuvres; through its means the Direction of the manœuvres were able to transmit lengthy orders to cavalry divisions manœuvring at a distance of from 3 to 4 miles, and the latter, for their part, were able to communicate important information by the same means.

It will be remembered that the rifle, model 1896, was first issued to the China Expeditionary Force, then the Guards' Corps; during 1902 it was distributed to many other army corps, and everything points to the conclusion that the whole German Army will be provided with it in the course of the present year.

With regard to the so-called "Boer tactics" which were so much discussed in the Press during the Imperial manœuvres, the journal already mentioned expresses itself as follows:—"The instruction of the Army during the past year was marked by a form of attack, called "Boer," which was the subject of numerous articles in the military Press. And after a novel method of attack had been experimented on the drill-grounds, this question was also discussed in the daily Press, which, however, threw no light on the subject. The very name, "Boer attack," has given rise to great misunderstanding, as most people thought that it meant the procedure adopted by the Boers for attacking the English. In regard to this it must be remarked that, with the exception of their numerous surprise attacks, the Boers very rarely took the offensive, and whenever they did so they attacked without any definite rule. It would be nearer the truth if by the "Boer attack" was meant the tactics employed by the English in attacking Boer positions. Even that is not correct: one should say "*The tactics which ought to have been employed to carry these positions.*" When the news first arrived that the English attacks had been repulsed, one was inclined to attribute these checks to the efficacy of the new arms, which

must have occasioned unprecedented losses; and it was considered that some means must be sought to allow for an advance under hostile fire by reducing the losses to a minimum. The means to attain this object was to utilise natural cover, and to gradually approach the position with thin lines of skirmishers. It appeared, however, through more detailed accounts, that the English losses were by no means as great as had been supposed, and that they were very short of those suffered by the Germans in their great and victorious attacks in 1870. These details showed us, too, that the English had attacked in altogether inappropriate formations, and that their want of success was chiefly due to want of cohesion in the advance and to a want of vigour in the commander. In consequence, therefore, a re-action soon took place, to the detriment of thin lines of skirmishers, for it was necessarily recognised that the influence of the commander in directing the operations was thus made more difficult. Instead of asking himself the question "How can I take my skirmishers to the enemy's position with the least possible loss?" it would be better to ask himself "How shall I take the position?" Thus, in reality, the last Imperial Grand Manœuvres, hardly ever bore the impress of the "Boer tactics," and when Press correspondents, for instance, stated that "the Boer tactics were brilliantly justified," it was merely a phrase addressed to a large, inexpert public."

"As regards the other arms there was nothing fresh; and the Grand Cavalry Manœuvres, directed by the Emperor in person, at Alten Graben, as well as the charges led by him, proved that if ever the German Army received the order to charge a shaken enemy it would show itself worthy of its old reputation of Mars-la-Tour. In spite of Q.F. guns and magazine rifles, cavalry may still have occasion for charging."

The author of this article is of opinion that the number of squadrons usually attached to each infantry division, viz., 3, would be insufficient in time of war.

In order to complete this account, it should be mentioned that the strength of the Brigade of Occupation in China has been reduced on two different occasions in the course of 1902. At the present time this Brigade only consists of 2 infantry regiments of 2 battalions of 3 companies each, 1 squadron, 1 battery, and 1 company of Engineers.—*Précis from Revue du Cercle Militaire.*

The German Cavalry.—Under the title of "More Cavalry," the *Jahrbücher für die Deutsche Armee und Marine* publishes an important article in its February number, from the pen of Lieut.-General von Pelet-Narbonne, who writes strongly against the disproportion that at present exists between the strength of the cavalry and that of other branches of the Service in the German Army.

The military writer starts by observing that one must be thankful for the formation of the 17 squadrons of mounted Jaegers raised since 1895, but that they by no means suffice to properly reinforce the arm which for 30 years has had no increase. The reasons for an increase of cavalry in Germany should be deduced from the following considerations:—

1. The rôle of cavalry in a future war is no less important than it has been in the past, whatever may be believed in certain quarters.
2. The most exact proportion between cavalry and infantry should be discussed and laid down.

3. The strength in cavalry of the Dual and of the Triple Alliances, and the distribution of the Service should be clearly shown in order to draw the necessary instruction therefrom.
4. From these considerations the minimum of increase in the number of the squadrons should be deduced.

The author subdivides the rôle of cavalry in future wars as follows :—

1. Action during mobilisation.
2. Action before collision.
3. Action during the fight.
4. Action after the fight.

1. During mobilisation the cavalry protects the frontier so as to ensure the assembly and the departure of reservists for the corps, the requisition and transport of horses, secures to the Army the resources of a portion of the frontier menaced, which might be of use to the enemy, at the same time it protects the inhabitants. The safety of the national Army is bound up in the protection of the frontier, on account of the extreme importance of the railways which are indispensable on the one hand for the carrying out of mobilisation, and on the other for the transport of troops into the field; these lines too are easy to damage. If, in consequence of the dearth of cavalry, the protection of the frontier is too weak, the enemy will take advantage of this weakness to fall upon this badly protected line and drive back its guard, disorganised and demoralised, upon its Army, which is in process of formation. The enemy will then profit by his raid to seize the State funds, destroy the mobilisation, prevent men from joining their corps, and carry off the horses for his own use. The consequences of such a raid are incalculable. Even should the hostile cavalry be repulsed later with heavy loss, the harm is, none the less, done; and the damage caused may unfavourably influence the whole course of the war. "The distribution of the cavalry of our neighbours on the east and on the west," observes the German writer, "points to some idea of this nature on their part."

2. Before collision, the cavalry has the important duty of carrying out strategic reconnaissance, so as to throw light on the species of fighting formations adopted by the enemy. With this object large masses of cavalry are sent out in advance of the Army. They, in their turn, throw out a dense network of patrols of small bodies, followed on the principal routes by strong fighting groups, which act as supports and reserves. According to the results obtained by this reconnaissance, the commander-in-chief makes his dispositions for the operations to be carried out. The duty of the cavalry now becomes to conceal these dispositions from the enemy. As the latter acts in the same manner, there is no doubt that encounters between cavalry must take place, and that victory will remain with the cavalry that is the best commanded, the best drilled, and the strongest. What would be the consequence of such a victory? It would permit the victor to discover the movements of the enemy's masses, and would enable him to conceal his own. In addition, one must reckon on the unfortunate consequence of the moral effect on beaten cavalry, which could perhaps never recover its *moral* during the whole course of the campaign, and on the unfavourable impression this would cause in the Army and throughout the country. It is very clear that the commander of a large unit, whose cavalry, beaten by that of the enemy, has to take refuge behind his infantry, is at a very great disadvantage. Such an event is the first step towards a far more decisive defeat. Speaking of the rôle of cavalry in tactical reconnaissance, the writer remarks that on account of the millions

of men composing modern Armies the time has gone by when a commander-in-chief could, like Frederick II., or Napoleon I., carry out personal reconnaissances before a battle. To-day a commander-in-chief can only make his dispositions according to the intelligence he receives, and in consequence of the enormous increase in armies, changes in operations take much longer, and are more difficult to carry out than formerly.

3. On the action of cavalry during the fight, the writer, very rightly, expresses himself at great length, and it can be seen from his account, which it is impossible to follow at length, the importance he attaches to cavalry on the battle-field, even in future wars.

4. In action after the fight, that is to say, in the pursuit, in the event, naturally, of a victorious action, the author considers that if, in the latter wars, cavalry have not carried out the pursuit as often as formerly, the fact must be attributed to the new infantry armament, against which cavalry could not successfully contend with the firearms with which it is at present armed. Now, however, it is quite otherwise. The cavalry pursuit should now be so carried out as to immediately follow the enemy with a small portion of the mounted troops, whilst the remainder, by parallel roads, would attempt to get in advance of him so as to fall on the flanks of his main body in retreat, the greater portion of his best troops being, naturally, with his rear guard.

When he passes to an examination of the organisation of cavalry with regard to the proportion of that arm as compared with the other branches of the Services, the German writer lays stress on the following considerations: He first of all lays down a fact, which has been long known, but on which it appears proper to insist more than ever at the present time, that "cavalry is the arm that is the least easily improvised." He then cites the opinion of Napoleon I., that "if the infantry of an Army be represented by 1, the cavalry should be $\frac{1}{4}$, the artillery $\frac{1}{2}$, the engineers $\frac{1}{4}$, and the transport $\frac{1}{16}$; in mountainous countries a proportion of $\frac{1}{2}$ cavalry to infantry would be sufficient." Passing then to a lengthy discussion, in which numerical tables of the effectives of the Russian, French, German, Austrian, and Italian cavalry play a very important rôle, the author arrives at the conclusion that the German cavalry should be increased by 27 regiments, or 166 squadrons, in any case, in his opinion, 118 fresh squadrons at the very least, should be raised. The proportion of cavalry to infantry would then be 1 to 10·7, instead of 1 to 8·7, which it is at the present time.

Imperial Manœuvres, 1903.—The regulations for these manœuvres were published on the 21st February last, and the manœuvres themselves will be of considerable extent. Two army units, consisting of 2 army corps each, will be opposed to one another. The one will consist of the entire Saxon Army, the XIIth and XIXth Army Corps. The XIIth Army Corps is under the command of General Prince Frederick Augustus, and the XIXth under that of General von Treitschke. This army will be reinforced by the "B" Cavalry Division, which already has a brigade from the XIIth Army Corps, and will be completed by 2 Prussian Cavalry Brigades, viz., the 9th at Glogau, and the 11th at Breslau. The chief command will probably be entrusted to either the War Minister or to General Freiherr von Hansen.

The other army will be formed by the IVth and XIth Prussian Army Corps, and by the "A" Cavalry Division. The IVth Army Corps is commanded by Lieut.-General von Beneckendorf und von Flindenburg,

and the XIth by General von Wittich. It is probable that the latter will assume supreme command of this army for the manœuvres, and will be replaced in his army corps command by a divisional commander. The "A" Cavalry Division will be formed from the 2nd Guards Cavalry Brigade, and from 2 combined brigades, the regiments of which will be selected from the IIIrd Army Corps (the 6th Cuirassiers and the 2nd Dragoons), and from the IVth Army Corps (the 7th Cuirassiers and the 16th Uhlans). The horse artillery brigade divisions will be selected from the 11th ("A" Division), and from the 12th ("B" Division) Field Artillery Regiments.

Each army corps will consist of 2 infantry divisions, of 2 brigades, of 2 regiments each. Regiments of 2 battalions will be completed by a third battalion of Reservists. The XIth Army Corps has an excess of 1 Jaeger battalion; a brigade of the XIIth Army Corps has 2 Jaeger battalions instead of an infantry regiment. As regards the divisional cavalry, each division will have its regiment. It is true that the XIth and XIXth Army Corps have only 1 brigade of cavalry, but they will not be obliged to detach regiments to cavalry divisions. As regards mounted Jaegers, the XIth Corps has 2 squadrons, 1 of which it will lend to the IVth; the XIIth and XIXth Army Corps having each a squadron. Every infantry division will have a field artillery brigade of 2 regiments. As regards the pioneers, nothing has as yet been decided. A balloon section and 2 machine-gun sections, taken from the Guards' Corps, will be attached to the IVth Army Corps. Those for the XIXth will be furnished by the IIIrd and VIth Army Corps. Eight Prussian and two Saxon transport battalions will form the food supply column.

The IVth Army Corps has its head quarters at Magdeburg, the XIIth and XIXth at Dresden and Leipzig respectively, and the XIth at Kassel, in Hesse. The manœuvres will probably take place in the eastern portion of Saxony between Halle and Merseburg. The Prussian army unit will consist of 49 infantry battalions, 20 squadrons of divisional cavalry, and 48 batteries; the Saxon will consist of 47 infantry battalions, 20 squadrons of divisional cavalry, and 48 batteries. Each cavalry division will consist of 30 squadrons, 2 batteries, and 1 pioneer section. Total effective, 96 battalions, 100 squadrons, and 100 batteries.

An order of the 12th February last contains the dispositions for the attack manœuvres on fortified field positions. They refer to the XIVth (Baden) and the XVIth (Lorraine) Army Corps. Pioneer manœuvres will take place on the Vistula, near Graudenz, and on the Moselle and Rhine, near Coblenz.—*Revue Militaire Suisse*.

The Calling out of Reservists in 1903.—The instructions for the calling out of Reservists for the current year have just been issued concerning those troops under the Prussian War Department.

In the IVth and XIth Army Corps which will take part in the Imperial manœuvres, the 153rd (Altenburg) the 165th (Goslar), and the 167th (Kassel) Infantry Regiments will form their third battalions entirely by means of Reservists. In the Ist, Vth, VIIIth, and IXth Army Corps, and in the Guards, an infantry regiment composed entirely of Reservists will be formed, and in the IInd, IVth, VIIth, Xth, XVIIth, and XVIIIth Army Corps a Reserve brigade division of field artillery, on a war footing: these units will be composed of men who would be drafted into them on mobilisation.

The following Reservists will take part in the manœuvres :—

	Men.
Infantry	160,100
Jaegers	3,750
Machine-gun Groups	120
Field Artillery	13,900
Foot Artillery	7,000
Engineers	4,200
Railway Brigade	2,140
Ballooning Battalion	325
Telegraph Troops	767
Transport	7,737
Total	200,039

The 13,900 men attached to the field artillery come partly from that branch of the Service and partly from the cavalry. The corps from whose districts the fewest numbers of Reservists are called out, are the XVIth Army Corps at Metz, 1,540 men; and the XVth Corps at Strasburg, 2,590 men. In the XVIth Army Corps (Grand Duchy of Baden and Upper Alsace) 8,950 Reservists are called out. The army corps in which most infantry Reservists are called out is the VIIth (Westphalian), where 23,970 men are summoned to the colours; it should be remarked that 8,000 of these Reservists are passed on to the XVIth, and 4,500 to the XVth Army Corps. The VIIIth (Rhenish) Army Corps calls out 13,120 men, of whom it passes 2,000 to the XVth and 1,500 to the XIVth Army Corps. The XIVth, XVth, and XVIth Army Corps receive a total of 29,080 infantry Reservists, the XIVth getting 10,450, the XVth 9,099, and the XVIth 9,540.

To these numbers should be added the Bavarian Reservists for the Bavarian Brigade at Metz, and for the garrisons of the Palatinate. In each army corps 44 men of the Ersatz Reserve will be called out to act as stretcher-bearers for a period of 6 weeks. 794 soldier artificers of the Ersatz Reserve will also be called out, who will be distributed among the various army corps, with the exception of the Guards. The XIVth Army Corps will receive 74; the XVth 12; and the XVIth 10.—*La France Militaire*.

ITALY.—*Draft of Recruiting Regulations*.—The War Minister has recently presented to the Chamber of Deputies a scheme which modifies the recruiting regulations at present in force. The following are the broad lines of the new scheme :—

As regards military obligations, the 1887 regulations divided the contingent into categories. The new scheme only allows for two. One category includes the permanent Army, and is subdivided into two parts, one consisting of the contingent actually enrolled, the other consisting of the supplementary contingent, which is not enrolled. The second category is entirely given up to the Reserve.

All young men fit for service, not entitled to any dispensation to draft them into the Reserve, belong to the first category of the contingent. To the Reserve belong those young men who are entitled to a dispensation from Regular service, as well as those who, although having some slight physical defect, may nevertheless, on an emergency, be drafted into the Regular service. These latter are entered in the category as "semi-fit."

The new draft regulation markedly limits the dispensation cases, of which the present regulation is extremely prodigal. The annual contingent will consequently be increased by a good third, or about 35,000 men. Under these circumstances the contingent will consist of nearly 135,000 men. Of this number 110,000 only will be enrolled; the remaining 25,000 will be sent on leave, and will form the supplementary contingent. The 110,000 men who should be enrolled annually will be distributed as follows in the Regular Army, with regard to their military obligations :—

					Men.
Obliged to serve for 3 years	...	...	...	...	45,000
" " " 2	"	"	"	"	22,000
" " " 1 year (12 months)	...	...	...	...	23,000
" " " 1	"	"	"	(6 months)	20,000

The men who only do about 6 months' service, from 1st March to 15th September, will be those who have been put back from the two preceding classes, as well as those on the recruiting lists who already have a brother with the colours compelled to at least two years' service in the Regular Army, etc. Given the numbers quoted above, as well as the dates on which the classes are called out (1st December for mounted and the 1st March for dismounted troops), it results that the effectives will be as follows, deduction being, of course, made of losses estimated at 4 per cent. for the first, 3 per cent. for the second, and 2 per cent. for the third year :—

					Men.
Maximum Effective from 1st March to 15th September	=	240,000			
" " " 15th September to 30th November	=	165,000			
" " " 1st December to 28th February	=	175,000			
Average Effective for 12 months	...	...	...	about=	206,000

From a budgetary point of view the new law will differ very slightly from the old one in force, although it shows a distinct advantage in the event of mobilisation. At present the active Army consists of 735,748 men, 11,754 of whom are not trained. When the new law takes full effect the permanent Army will consist of 1,018,473 men, 202,299 of whom will be untrained. If deduction, then, is made of the untrained men, whose use is uncertain, it will be seen that the new organisation will put 91,780 more trained men at the disposal of the permanent Army than the law at present in force. If the composition of the trained contingent of the permanent Army is studied, the following differences between the two organisations will be perceived :—

					Present Law.	New Law.	Difference.
					Per cent.	Per cent.	Per cent.
Men having undergone at least 3 periods of instruction					51.43	45.65	5.78
" " " 2	"	"	"	"	41.49	18.39	23.10
" " " 1	"	"	"	"	7.07	35.95	28.88

Identical results will be obtained with regard to the composition of the Militia. In short, under the new regulation Italy will increase the number of her trained men, but she will diminish the value of their training, for the number of partially trained men (one period) will exceed one-third of the total of trained men, whilst at present the proportion is only 7 per cent.—*La France Militaire*.

RUSSIA.—*The Military Year 1902.*—This year was marked by the celebration of the various anniversaries of the Russo-Turkish War. By an Imperial decree, the official date of this war was fixed for the 10th December, the day of the fall of Plevna. On this occasion a certain number of captains who took part in that campaign were promoted to the rank of lieutenant-colonel. It will be remembered that the Grand Duke Nicholas Nikolaievitch, General Kouropatkine, the War Minister, General Dragomirov, and many other military personages assisted at the manoeuvres of the Bulgarian Army in the Shipka Pass, as well as at the inauguration of a commemorative chapel, built at Scheinov. On the 12th January last the Russians celebrated another anniversary, viz., that of the organisation of the War Department.

From a military point of view, one of the most important events of last year was the carrying out of the Imperial Grand Manœuvres at Kursk, in which nearly 100,000 troops took part. The chief characteristic of these manœuvres was the great liberty of action left to the army commanders, who were thus able to impart to them more of the reality of actual war. The telegraph, telephone, carrier pigeons, automobiles, and camp kitchens were used with great success during the course of these manœuvres.

The armament of the artillery with the new Q.F. 75-mm. field guns is being carried out. Notwithstanding the adoption of this new gun, the Russians still maintain their batteries at 8 guns each, but they group them into regiments of 3 or 4 batteries, and into brigades of 2 regiments. An order of January, 1902, directed the transformation, into light batteries, of such heavy batteries as were not selected for immediate armament with Q.F. guns. Artillery parks and corresponding places keep their present organisation and effective; at the same time the wagons of artillery parks will be subdivided into compartments, corresponding with those of light batteries; as regards local parks, the ammunition for heavy batteries will merely be withdrawn on account of the adoption of the Q.F. gun. The siege parks have been changed into 4 regiments of siege artillery; 3 in European Russia, and 1 in the Caucasus. An order of July, 1902, directs the formation of a mortar battery to the 2nd Artillery Brigade in Turkestan. This brigade will consist of 4 light batteries, and of 1 mountain and 1 mortar battery.

As regards the infantry, the 1st, 2nd and 3rd Siberian Brigades have been given a new designation, viz., that of Reserve Brigades. The reserve battalions of the Siberian and Amur military districts have been specially numbered. The Kovel infantry regiment has been changed into the 49th Reserve Brigade of Infantry.

In the cavalry the number of Transbaikan Cossack units mobilised in time of war has been increased by a regiment of the 2nd Levy, viz., by the 2nd (Nertchin) Cossack Regiment. The Oural instruction sotnia has been changed into an independent sotnia. There has, hitherto, been only one cavalry school in Russia, the Nicholas School, at St. Petersburg; by an order of July last the Junkers Cavalry School, at Elisavetgrad, has been changed into a cavalry school.

The needs of the officers have also received official attention, thus the allowances for lodging, fuel, and light, etc., have been increased. The Russian Staff, having need for a considerable number of reserve officers, in common with all great Military Powers, has taken steps to ensure a proper preparation, from the greatest possible number of the 1st Category Volunteers, for the rank of *praportschik* (ensign) in the Reserve. In order to stimulate the zeal of commanders of companies, squadrons, and

batteries with regard to the training of future reserve officers, it has been decided, as a tentative measure, and for a period of five years, that these commanders of units should receive, in addition to their usual rate of pay, an allowance the amount of which will depend on the number of candidates that they have successfully prepared for the examination of *praportschik* in the Reserve.

Amongst the new regulations, or drafts of regulations, sanctioned by the Tsar in 1902, may be mentioned that for the instruction of men in various branches of the Service; that for the rail transport of Reservists to their places of assembly on mobilisation; and the provisional regulation regarding the Amur and Oussouri Cossack flotilla. This flotilla consists of 2 steam-boats with lighters, and a steam-launch, with a personnel of 3 officers and 38 men. Its object is to ensure the safety of the navigation of the Amur, Oussouri, and the affluents of the Amur, for all sorts of boats against the Tougouses; to protect the inhabitants of the left bank of the Amur and of the right bank of the Oussouri against the latter; to accelerate the assembly, in war-time, of Cossacks, Reservists, horses, carts, and the necessary supplies for military operations; and, finally, to keep up regular communication between the Cossack villages established on the Oussouri, on the Soungatcha, and on Lake Khanka.

As regards the Medical Service, mention should be made with regard to the increase in the pay of military surgeons, and the making over of the commands of hospitals to the latter.

An important order was that of 9th June, 1902, which altered the conditions of the service of officers leaving the Staff College, especially with regard to the time to be spent by these officers with their regiments. The principal changes of this order consist in raising from one to two years the time to be spent in command of a unit by subaltern officers of the Staff; to double the number of the officers detached for Staff service, and to improve the conditions for the promotion of officers, who can now only enter the Staff as 1st captains, whereas they were formerly able to do so as 2nd captains. Officers, on leaving the Cadet Corps, obtain, on an average the rank of 2nd lieutenant at the age of 19; these officers can enter the Staff College at 22, become lieutenants at 23, 2nd captains at 25, 1st staff captains at 27, lieut.-colonels at 31, colonels at 34, and generals at 42. Lieut.-colonels who aspire to the position, either of chief Staff officer to a division, or to the command of a regiment, must first undergo a four months' course in summer, in their own branch of the Service. Every lieut.-colonel must, in addition, go through courses in other branches of the Service besides the one he belongs to, viz., 2 months in the artillery at the period of gunnery practice, 1 month in the cavalry or infantry during the summer manœuvres. Steps have been taken to ensure that the musketry shall be carried out under the same conditions, as far as as possible, as those of war. The mobilisation instructions for the various branches of the Service have also been revised.—*Revue du Cercle Militaire*.

The Recruit Contingent for 1902.—The contingent to be called out, in 1902, for the whole of the military and naval forces was fixed at 318,745 men, by an Imperial Ukase of the 10th July, 1902. The population of Russia, according to the 1897 census, was 129,211,113 persons, which, increasing by about 1,000,000 souls a year, would make the contingent represent about 23 per cent. of the population. The number of youths on the recruiting lists was 996,323. To this number was added 20,944 young men who had no birth certificate, but whose appearance justified the supposition that they were of an age to be classified with the others; and

also young men who had before obtained a respite, or were obliged to serve without drawing lots, about 105,633. This, then, would make the total of those liable to be called out about 1,122,900. The number of men actually enrolled in the military and naval forces was 315,832. If to this number is added 2,913 men who failed to appear, the theoretical effective, mentioned above, of 318,745 recruits is obtained. The number of those exempted from service amounted to :—

	Men.
For the 1st Category	228,410
„ 2nd „	203,029
„ 3rd „	54,373
Total	485,812

The Boards had to examine 615,252 men, and took 315,832. The results of this examination were as follows :—

	Men.
1. Put back for weakness of constitution ...	91,136
2. Taken on trial	24,656
3. To undergo a second medical examination ...	5,476
4. Quite unfit for military service ...	68,312
3. Drafted into Militia (2nd Levy) ...	83,602
4. „ „ „ (1st Levy) ...	224,247

From amongst men enjoying dispensations, the Boards called to the colours :—

	Men.
From the 1st Category ¹	395
„ 2nd „	4,813
„ 3rd „	6,712

The above numbers do not include the Finland contingent, or the Cossack population, who are under special regulations. For 1902, the Finland contingent was very small, and fixed at 280 men. The Cossack contingent was about 16,500.—*Revue Militaire*.

CORRESPONDENCE.

The Editor regrets that the publication of the following letters have been delayed owing to pressure for space.

“GENERAL WOLFE'S ADVICE TO A NEWLY-JOINED ENSIGN IN 1756.”

To the Editor of the JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION.

SIR,—In No. 298, Vol. XLVI., 15th December, 1902, of the JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION, I found, on page 1598, the *fac-simile* of a watermark on the paper of General Wolfe's letter, about which I should be glad to make some observations.

¹ The places of those who failed to appear are, as a rule, taken by men of the same religion, without, in case of necessity, taking account of dispensations.

This paper has for centuries been fabricated in Holland, and is still made in this country, though the watermark has since somewhat been modified.

The figure on the right is not Britannia, but the Netherlands Virgin—in those past times represented sitting or standing in the (so-called) Dutch garden, which the stockade must represent. In her right hand she has, not a battle-axe, but a stake, with the Cap of Liberty. I must acknowledge that no one, not knowing the fact, would make a cap of it. The lion is the Netherlands lion, as still can be seen on the arms of the Kingdom (on which, however, he now wears a crown royal). He is brandishing a sword in his dexter paw, and in his sinister paw grasps, not a bundle of fascines, but a bundle of arrows. These arrows represent the United Provinces, which, each of them apart, were weak, but, bound together like these arrows, were not so easily to be broken.

This is the meaning of the device in the actual watermark you may see in the sheet of paper on which I have the honour to write you this letter:—"Eindracht maakt macht," or in French, "L'union fait la force." I am sorry not knowing the proper translation in English. In this watermark the arrows have been omitted.

Yours respectfully,

O. VAN LENNEP,

Lieutenant, Royal Dutch Navy,

H.N.M.S. "Evertsen,"

den Helder, Holland.

To the Editor of the JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION.

SIR,—Thanks to Major Field's interesting and instructive letter, printed in your JOURNAL for December, we now know that the water-mark on General Wolfe's letter-paper is a Dutch design of very old standing. A visit I recently made to the Department of MSS., British Museum, elicits the fact that the British Government under the early Georges, must have had a portion of their official paper "made in Holland." The water-mark in question is frequently met with on 18th century letter-paper; the Dutch design appears on the upper side of the paper, and the letters "G. R.," surmounted by a crown, are given on the opposite half-sheet. It will be remembered that in my description of General Wolfe's letter I mentioned it was the "first half of an unaddressed letter"; the missing half, without doubt, bore the "G.R." and crown water-mark. I may mention, incidentally, that in the first half of the 18th century the Dutch lion was sometimes represented holding the long spear with a cap, or hat, on the top of it. I have in my possession a Dutch copper coin, the size of a farthing, on the obverse of which is "HOLLANDIA, 1739," and on the reverse an uncrowned lion rampant holding a burgher's hat on the top of a spear. The lion is inside a stockade, or fence. I took this coin to the Coin Department, British Museum, and was told that the fence represented "The Hague."

I am,

Yours faithfully,

CHARLES DALTON.

7th February, 1903.

NAVAL AND MILITARY CALENDAR.

MARCH, 1903.

- 2nd (M.) Headquarters and 4 companies 1st Bn. Royal Dublin Fusiliers arrived at Crete from Malta in the "Ortona."
- 3rd (T.) Headquarters and 4 companies 2nd Bn. Cameron Highlanders left Crete for Malta in the "Ortona."
- " " General Manning announced the occupation of Galkaya Wells, Somaliland, by the British.
- 4th (W.) H.M.S. "Arethusa" arrived at Plymouth from China.
- " " An Army Order was issued abolishing the lance except for ceremonial and recreative purposes.
- " " Revised rule was issued with regard to the tenure of staff appointments in the Army.
- " " Damot Wells, in Somaliland, were occupied by the British.
- 5th (Th.) H.M.S. "Scout" arrived at Portsmouth from the Mediterranean.
- " " 39th and 41st Companies R.G.A. left Aden for Southampton in the "Syria."
- 7th (Sat.) Launch of third-class cruiser "Chattanooga" at Elizabethport, New Jersey, for U.S. Navy.
- 10th (T.) The Secretary of State for War made a statement in the House of Commons on the military policy of the Government.
- " " 1st Bn. Manchester Regiment left South Africa for Singapore in the "Dilwara."
- " " No. 10 Battery R.G.A. (Mountain Division) } Left South Africa for Ireland and England in the "Sunda."
- " " 1st Bn. Worcestershire Regiment }
- 11th (W.) It was announced in the House of Commons that a Royal Commission regarding food supply in war-time would be appointed.
- " " 2nd Bn. South Lancashire Regiment arrived at Southampton from India in the "Soudan."
- " " Headquarters and 4 companies 2nd Bn. Cameron Highlanders arrived at Malta from Crete in the "Ortona."
- 12th (Th.) 1st Bn. Shropshire Light Infantry arrived at Southampton from India in the "Plassy."
- 14th (Sat.) Launch of H.M.S. "Clio" at Sheerness.
- 15th (S.) British force occupied Sokoto, Nigeria.
- 16th (M.) General Manning announced the capture of Lasakante Wells, Somaliland, by the British.
- " " 2nd Bn. Royal Lancaster Regiment } Left South Africa for England
- " " 2nd Bn. Bedfordshire Regiment } in the "Ionian."
- 17th (T.) H.M. ships "Spartiate" and "Europa" commissioned at Portsmouth for relief duty.
- " " H.M.S. "Sirius" commissioned at Devonport for China.
- " " 2nd Bn. Royal Irish Regiment arrived at Queenstown, Ireland, from India in the "Sicilia."
- 19th (Th.) An Iradé was issued by the Porte conceding the demands made by the British Government regarding the Aden Hinterland.
- " " 3rd Bn. King's Royal Rifles arrived at Queenstown, Ireland, from South Africa in the "Dominion."

- 21st (Sat.) 1st Bn. Royal Scots arrived at Southampton from South Africa in the "Dominion."
- " " 39th and 41st Companies R.G.A. arrived at Southampton from Aden in the "Syria."
- 22nd (S.) H.M.S. "Canopus" arrived at Spithead from the Mediterranean.
- 25th (W.) H.M.S. "Europa" left Portsmouth for China.
- 26th (Th.) H.M.S. "Spartiate" left Portsmouth for China.
- 28th (S.) 14th Hussars) Left South Africa for Egypt and
" " 20th Hussars) England in the "Dunera."
- 29th (M.) British force engaged the enemy in Somaliland, killed 27, and captured many prisoners and camels.
- 31st (T.) H.M.S. "Phaeton" arrived at Plymouth from Pacific.
- " " Galadi, Somaliland, was occupied by the British without opposition.

FOREIGN PERIODICALS.

NAVAL.

ARGENTINE REPUBLIC.—*Boletín del Centro Naval*. Buenos Aires: January, 1903.—"Experimental Determination of the Curves of Gyration" (*continued*). "Inland Waterways in Relation to other Means of Transport" (*concluded*). "New Cruisers." "Destruction of the Hulls of Sunken Ships in the River Plate." "The Effects of Corrosion on the Bottoms of Steel Ships." "Method for finding the True Force and Direction of the Wind." "The Inland Navigation of the Argentine Republic." "The Training Frigate 'Presidente Sarmiento.'" "Foreign Naval Notes."

AUSTRIA-HUNGARY.—*Mittheilungen aus dem Gebiete des Seewesens*. No. 4. Pola: April, 1903.—"The Development of Wireless Telegraphy" (*concluded*). "On Submarine Cables." "Foreign Naval Notes."

BRAZIL.—*Revista Marítima Brasileira*. Rio de Janeiro: January, 1903.—"In Memoriam: Admiral Marques Guimaraes." "Guns and Armour." "Submarine Works." "Some Ideas on the Movements and Training of the Fleet." "Naval Signalling." "A Conference on Wireless Telegraphy."

FRANCE.—*Revue Maritime*. Paris: February, 1903.—"On the Disposition of the Guns on board Armoured Ships." "A Climatological Study of the South (Crete)." "Note on the Repairing on board of Thomson's Sounding Tubes." "The Norwegian Navy." "The *Défense-Mobile* of the Italian Coasts." "On the Supposed Weakness of England." "The Experiments with Wireless Telegraphy on board the 'Carlo Alberto.'" "

Le Yacht. Paris: 7th March, 1903.—"M. Pelletan's Speech in the Chamber." "Yachting Notes." "The French Arctic Expedition." "The Mercantile Marine: French and Foreign." "The Composition of Crews on board Merchant Ships." 14th March.—"The Report on the Naval Estimates." "Yachting Notes." "The new first-class Armoured Cruiser 'Sully.'" "The Mercantile Marine: French and Foreign." 21st March,—"The Defence of the Coasts." "Yachting Notes." "The Mercantile

Marine : French and Foreign." "The Central Committee of French Ship-owners." "The Case of the *Leo XIII.*" 28th March.—"The Entry of Naval Officers and Engineers." "Yachting Notes." "The Visit of the Minister of Marine to St. Malo." "The Mercantile Marine : French and Foreign." "The Pilotage Question on the Loire."

Le Moniteur de la Flotte. Paris : 7th March, 1903.—"The Views of the English Cabinet on War." "The Navy in Parliament." "The Death of Vice-Admiral Roustan." 14th March.—"The New Organisation of the English Fleets." "The English Naval Estimates." "The Cruise of M. Loubet." "Colonial Notes." 21st March.—"The New English Building Programme." "The Naval Budget in the Senate." "The English Naval Estimates in Parliament." "The Re-organisation of our Naval Divisions." 28th March.—"The Naval Aspirants." "A New Type of Passenger Vessel." "The Naval Budget in the Senate."

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GERMANY.—*Marine-Rundschau.* Berlin : April, 1903.—"General von Roon as Minister of Marine." "The Port of London." "De Ruyter (concluded)." "The Indian Expeditionary Force from Bombay to the Mediterranean, 1878." "The English Naval Estimates, 1903." "The Water-tube Boiler Question in the French Navy." "Foreign Naval Notes."

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NOTICES OF BOOKS.

Breaking and Riding; With Military Commentaries. By JAMES FILLIS, Ecuyer en Chef to the Central Cavalry School at St. Petersburg. Translated by M. H. Hayes, F.R.C.V.S., author of “Points of the Horse,” “Riding and Hunting,” etc. With 70 illustrations. London: Hurst and Blackett, 13, Great Marlborough Street. 1902.

The original of this work was reviewed at length in these pages in 1895; and both its author and the British Army are to be congratulated on having at length obtained such a very competent translator for the exceedingly difficult task of rendering such a highly technical and excellent book accessible to English readers.

As a general rule, men who excel in the saddle do not shine with the pen, and as a consequence the literature connected with horsemanship is

frequently dreary reading and a most unprofitable study, for of all subjects under the sun we believe there is none more difficult to treat on paper than the feel of a horse's mouth, the nature of his paces, and so forth. Mr. Fillis has, however, gone to the root of the matter and made thoroughly clear the objects of horsemanship and the limitations imposed on it by the nature of the material with which it has to deal.

It is also his special merit that he not only teaches theory, but has as a fact demonstrated the soundness of his theory by many years of practice. Possessing an intimate acquaintance with the rival schools of France and England—which practically implies of the riding school and hunting field—he has seen the weak points of both, and has propounded a method of reconciliation between them which must appeal to every cavalry soldier who knows how difficult it is in practice to obtain that "unconditional obedience" of the horse to the rider so essential to the efficiency of the masses, together with the free-going stride and reliability over obstacles requisite for the duties of scouting and patrols. Hitherto all methods of military breaking and training as usually practised have tended to cramp the horse's paces, and made him dangerous over broken ground; every cavalry in Europe has complained of them; but in their efforts to avoid these difficulties they have stumbled into the worse one of destroying the rider's control over his horse's movements.

How Mr. Fillis has succeeded in reconciling these contradictory tendencies is his secret; and we must leave it to the readers of his book to find out. We would, however, only point out in passing that the late "Fred Archer" was one of Mr. Fillis's pupils, and undoubtedly owed much of his phenomenal success to his skill in grasping and interpreting his instructor's methods.

Soldiers of the King: Their Battles, Sieges, and Campaigns. By Colonel G. J. HARCOURT, late 102nd Regiment. 2nd Edition. Gale and Polden. 1902.

This work is a well-intentioned effort to preserve and perpetuate the identity of the regiments of the British Army as they stood prior to the changes introduced on 1st July, 1881. The writer must not expect everyone to agree with his statement that the linking of the infantry regiments was in every case effected without regard to tradition and former history. It will suffice to mention one case—that of the Black Watch, in which the 42nd has amalgamated with its original second battalion, the 73rd. There are many who are in sympathy with the territorial system. The Recruiting Committee of 1892 reported that the evidence in favour of the system was "overwhelming." It has stood the test of over twenty years, and the opposition to it has in many cases subsided. Colonel Harcourt has, however, produced a useful little book of reference, which will enable interested persons to identify regiments under their nomenclature of to-day, in those military histories which were written at a time when regimental numbers were the only recognised distinction. With regard to the battle honours of regiments, the author begins with 1689 and the battle of Inniskilling, and brings his readers down to the end of the late Boer War.

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The Cambridge Modern History. Vol. I., The Renaissance. Edited by Messrs. A. W. WARD, G. W. PROTHERO, and STANLEY LEATHES. 8vo. 16s. (Cambridge University Press.) Cambridge, 1902.

The Rival Powers in Central Asia. By JOSEPH POPOWSKI. Translated by A. B. BRABANT and C. E. D. BLACK. 8vo. 12s. 6d. (Archibald Constable and Co.) London, 1893.

L'Esprit de la Guerre Moderne—De Rosbach à Ulm. By General H. BONNAL. 8vo. (R. Chapelot et Cie.) 5s. 9d. Paris, 1903.

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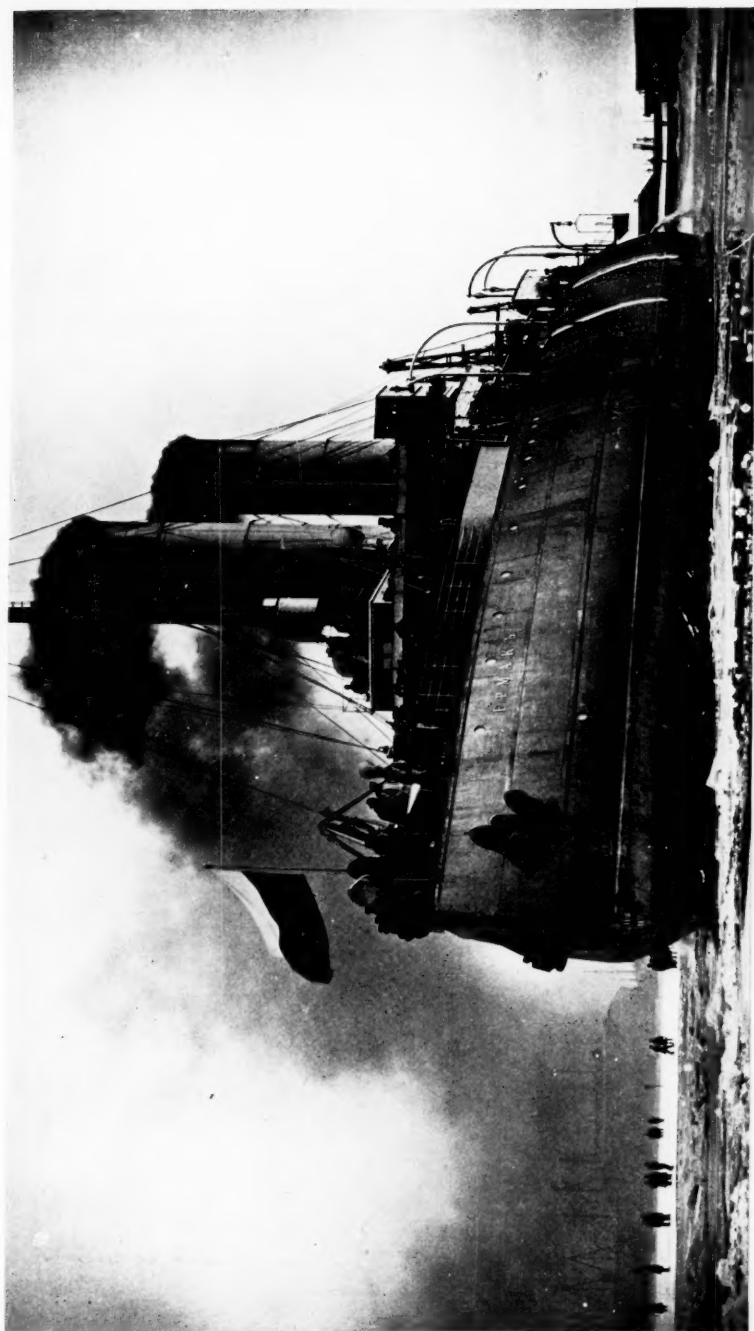
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